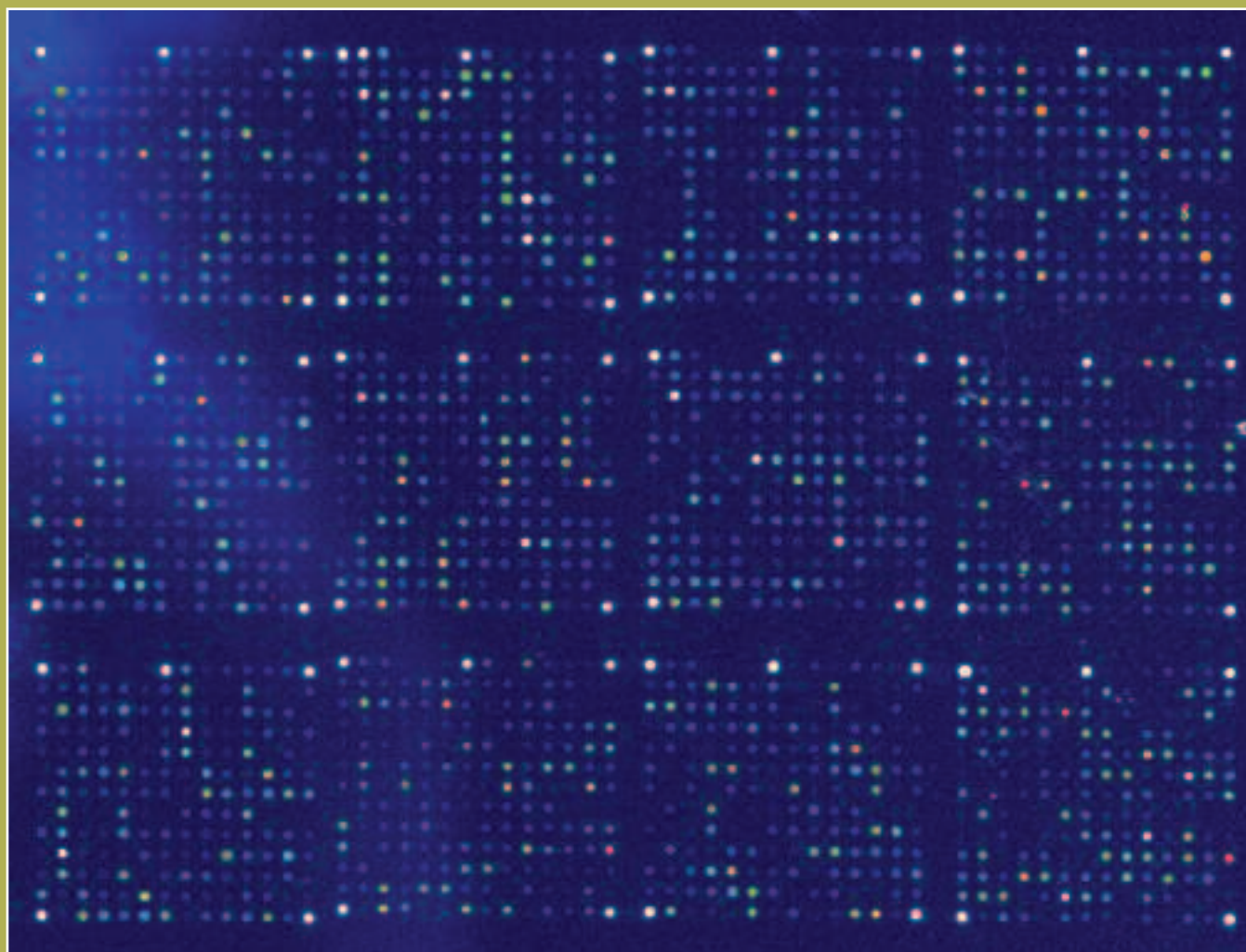


The Report of the Chief Veterinary Officer
Animal Health 2005



Llywodraeth Cynulliad Cymru
Welsh Assembly Government



SCOTTISH EXECUTIVE



defra

Department for Environment
Food and Rural Affairs

The Report of the Chief Veterinary Officer

Animal Health 2005

Department for Environment, Food and Rural Affairs
Scottish Executive Environment and Rural Affairs Department
Welsh Assembly Government
May 2006

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Foreword



I am pleased to present this Annual Report on animal health for 2005 which describes progress and developments in the fields of animal health and welfare within Great Britain (GB) during the last calendar year. It proved to be a challenging but successful year with a number of notable achievements. We contended with the threats posed by two exotic diseases and held the Presidency of the European Union between July and December. We also made good progress with a number of new and on-going animal health and welfare issues.

The Animal Health and Welfare Strategy in its first full year has seen the creation of separate advisory groups in England and Scotland, which join the existing Wales Group, to take forward delivery of the Strategy's vision. These groups comprise of a wide range of stakeholders and are a good illustration of Government working effectively in partnership with others. On 1 April 2005 the State Veterinary Service became an executive agency of Defra. This key milestone represents another step towards a more strategic approach to policy making. It requires closer partnership working with our delivery agents and stakeholders to better achieve our aims.

In the second half of the year the UK held the Presidency of the European Union. During this time we drove forward a wide ranging series of programmes including providing strategic direction on future Community animal health policy, and agreed a new Directive updating controls on avian influenza.

The outbreak of Newcastle Disease in Surrey and continued concerns about avian influenza serve to remind us that an animal disease outbreak remains one of our top threats. Work has continued to prepare and test robust contingency plans so that we are ready to deal with any future animal disease outbreak.

We launched a Strategic Framework on TB based on the principles of the Animal Health and Welfare Strategy to enhance our ability to tailor disease control policies and reduce the economic impact of bovine TB. BSE cases have continued to decline during the year. This sustained success has enabled the Over Thirty Month rule to be replaced and also enabled the UK to acquire 'moderate' risk status. Furthermore, following a successful Food and Veterinary Office mission we moved closer to the lifting of the export ban on British beef which was subsequently announced in March 2006.

Foreword

Towards the end of the year, the Animal Welfare Bill was introduced in Parliament. The new Bill represents the most significant piece of animal welfare legislation for a century.

In conclusion, I should like to record my gratitude to all my staff and our stakeholders for their efforts during the past year and the huge achievements they have delivered. 2006 will be yet another challenging year but I am confident we are well equipped to meet these challenges effectively and efficiently.



Dr Debby Reynolds BVSc PhD MRCVS

Chief Veterinary Officer (UK),
Director General Animal Health and Welfare (Defra)
and Veterinary Head of Profession.

Executive Summary

The Animal Health and Welfare Strategy celebrated its first anniversary in 2005 with several notable achievements. Key to progress was the creation of national stakeholder advisory groups in England and Scotland, adding to the existing group in Wales, which oversee the delivery of the Strategy in their respective countries. The national advisory groups will determine and act upon the priorities and challenges unique to their own areas.

The Strategy drives our work and evidence of putting its principles into practice are in this report. Central to the Strategy is effective partnership working with our stakeholders. This has enabled Government and stakeholders to work more closely and effectively to an agreed framework, with clearly defined roles and responsibilities, and to plan strategically for the advancement of animal health and welfare issues.

As well as working with industry partners and consumer groups, we have in the last year begun to develop the relationship we have with our delivery partners. The State Veterinary Service became an Executive Agency on 1 April 2005 which has enabled it to focus on enhancing its delivery capabilities and operational management systems. We have, of course, continued to work closely with the devolved administrations, local authorities, and other Government Departments, as well as delivery agents including the Veterinary Laboratories Agency, Veterinary Medicines Directorate and the Meat Hygiene Service.

During the second half of 2005 the UK held the Presidency of the EU. During these six months we led progress and provided strategic direction in the area of animal health and welfare across Europe. Significant achievements include agreement on controls on avian influenza, a successful workshop of Chief Veterinary Officers (CVOs) on future community animal health policy and progress on the Transmissible Spongiform Encephalopathy (TSE) Roadmap which outlines measures and goals for the eradication of Bovine Spongiform Encephalopathy (BSE).

Research and surveillance activities continued to be central to our evidence based policy making. We have funded research covering a wide range of animal health and welfare programmes, and directed significant funding to the control of transmissible diseases such as TSEs and bovine TB. The introduction of the Rapid Analysis and Detection of Animal-related Risks (RADAR) system is a significant development in meeting this objective.

Following the discovery of Newcastle Disease in a consignment of imported pheasants in July 2005, Defra's Exotic Disease Contingency plan was invoked for the first time in four years. Emergency preparedness is a major priority and the development of the first exotic animal disease generic contingency plan is a significant landmark. It sets out the structures and systems to be implemented in the event of an outbreak of any exotic animal disease and also explains the requirements for dealing with Foot and Mouth Disease, avian influenza, Newcastle Disease and Classical Swine Fever. Work was also done on enhancing the Rabies contingency plan as well as the development of a plan for horse diseases.

Executive Summary

During the autumn, the highly pathogenic strain of avian influenza moved westward across Asia toward Europe with confirmed cases in Romania and Turkey. We have been working in close collaboration with our delivery partners, other Government Departments, external stakeholders (including industry, veterinary, retail and welfare groups) and European colleagues on policies to control any outbreak in GB. This has included the preparation and testing of contingency plans. Following the discovery of the H5N1 virus in a quarantined bird in October 2005, an independent review of avian quarantine arrangements was carried out and all imports of captive birds in the EU were suspended. Furthermore, new wild bird surveillance arrangements were put in place on certain species of migratory water birds and advice issued on how to improve biosecurity, encouraging bird keepers to feed and water birds under cover and to register on the new GB Poultry Register.

We published a strategic framework for the sustainable control of bovine TB in GB. Building on previous action plans and the Animal Health and Welfare Strategy, the framework sets out a vision for the future and aims to control and prevent the geographical spread of the disease. It also aims to reduce the economic impact of bovine TB, maintain animal health and welfare, and protect public health. Towards the end of the year a public consultation began on the culling of badgers for the control of bovine TB in cattle in England. The consultation closed in March 2006 and will help inform decision making on this policy.

BSE cases continued to decline in GB. There were significant BSE milestones in 2005 including the replacement of the Over Thirty Month rule with a rapid test for BSE in a new robust system. Following discussions with the European Commission and our EU partners, we also received confirmation of the UK as a 'moderate' risk status, and considerable progress was made towards the lifting of trade restrictions on British beef.

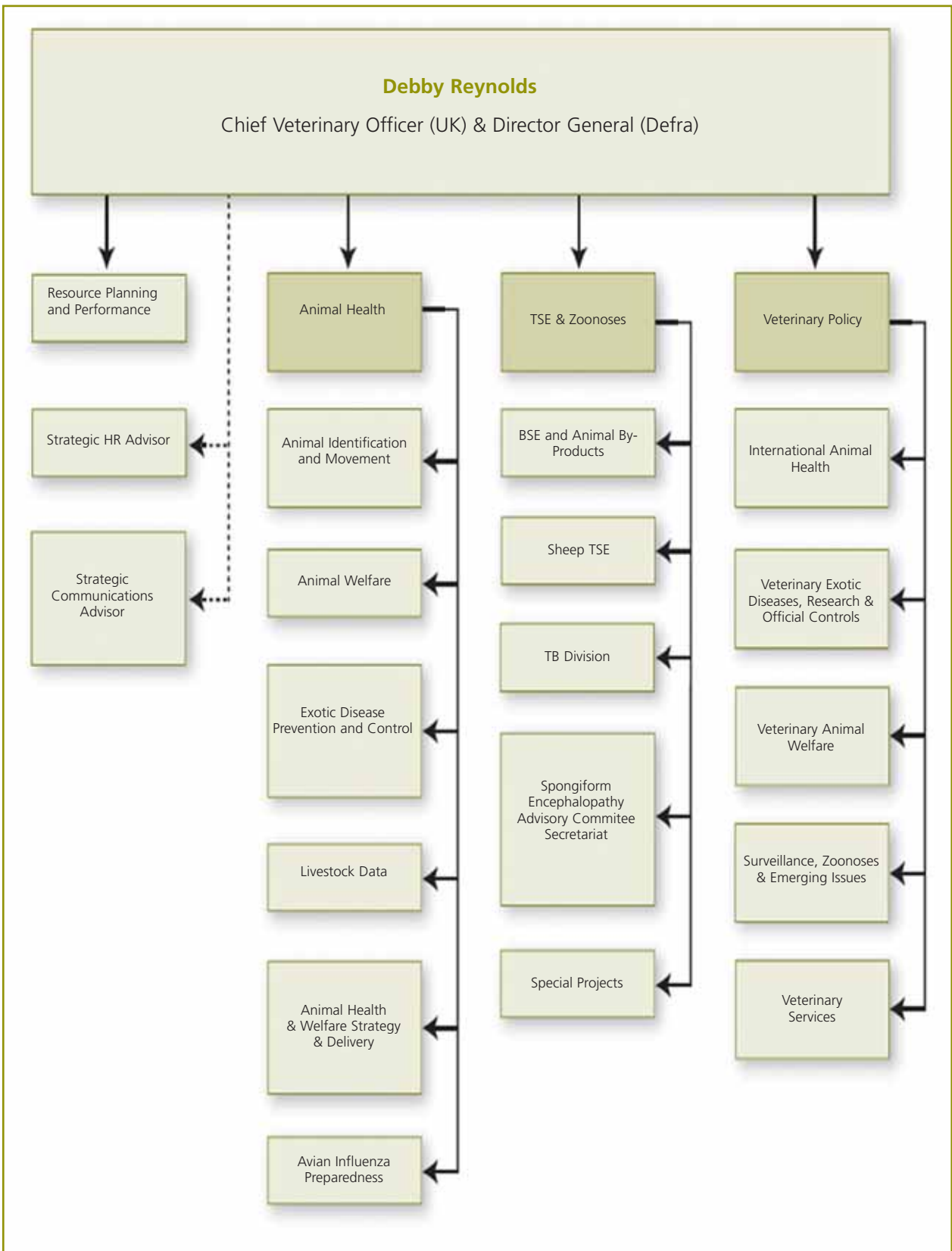
Good progress was also made in scrapie detection, with a reduction in the number of animals slaughtered. The National Scrapie Plan continues to be a success with increased membership to the Ram Genotyping Scheme. Controls on the handling and disposal of animal by-products continued with the aim of protecting public and animal health in relation to TSEs and other diseases. In conjunction with the Devolved Administrations for Scotland and Wales, and industry representatives, work has continued on the development of a new Livestock Register which aims to provide a unified system for tracking cattle, sheep, pigs and poultry from 2007.

To safeguard GB's disease free status, we continued to monitor imports of animals and animal by-products from countries outside of the EU. International disease monitoring and risk assessments have a central role in increasing awareness and our defences. During 2005, we published 26 preliminary outbreak assessments and 13 qualitative risk assessments on a wide variety of disease outbreaks in countries with which GB trades.

Finally to cap 2005, the Animal Welfare Bill was introduced in Parliament representing a radical development in animal welfare legislation and heralding a key vision of the Animal Health and Welfare Strategy.

The Report of the Chief Veterinary Officer – Animal Health 2005

Animal Health and Welfare Directorate General (Defra) Leadership Structure



Section A: Strategic Overview

A1: The Animal Health and Welfare Strategy

The Animal Health and Welfare Strategy for Great Britain (GB), launched in June 2004, charts a course towards a better future for all of Britain's kept animals, over the next eight years. The Strategy is guiding the work of Government but it is a strategy for all with an interest in better animal wellbeing.

National Advisory Groups find their feet

The key theme of the Strategy is partnership working – it recognises that while government can act as a facilitator in improving animal health and welfare, it is important to involve all interested parties when discussing how this is done on the ground. To this end, government has brought together key stakeholders in three national stakeholder advisory groups to oversee the delivery of the Strategy in England, Scotland and Wales, recognising that the countries have distinct animal populations and industries, and therefore different national priorities and challenges. The Scottish and English groups were launched in 2005, joining the Welsh group that was formed in October 2004.

The Animal Health and Welfare Strategy England Implementation Group, created in July 2005, is a group of 13 stakeholder representatives chaired by Helen Browning OBE, an independent farmer. Its aim is to drive forward delivery of the Strategy's vision **(Figure A1.1)** within England and work with Government, the livestock and food industries, animal owners, the veterinary profession, consumers and other stakeholders to foster wide ownership of the Strategy and a shared commitment to its outcomes. During 2005, the Group focussed on how the Strategy is being delivered across the different sectors and where it might best intervene.

The Scotland Animal Health and Welfare Advisory Group, chaired by Charles Milne, CVO (Scotland), is composed of prominent members of the industry, the veterinary profession and the science community. The Group is facilitated by the Scottish Executive and gives leadership to the industry in Scotland. Its primary aim is to advise on and communicate the opportunities provided by the Strategy. There have been three Animal Health and Welfare Conferences in Scotland, and at the 2005 event the Group outlined a list of priority diseases and welfare conditions, along with targets for their achievement. These were endorsed by the industry, and the Group are now developing a Scottish Programme to deliver on and communicate them.

The Wales Animal Health and Welfare Strategy Steering Committee is chaired by Huw Davies, a sheep farmer from Camarthenshire, and is composed of stakeholders drawn from a range of key organisations. Its aim is to advise the Welsh Assembly Government on the implementation of the Strategy, and during 2005 it set targets for animal health and welfare in Wales, which it published in its Annual Action Plan. The 2005 Welsh Animal Health and Welfare Strategy conference reviewed progress to date and addressed the Strategy's key aims of working in partnership, the costs and benefits of controlling animal diseases and prevention being better than cure.

To share good practice across the three countries the three groups will now regularly keep in touch, both through meetings of their chairs and through their secretariats.

Figure A1.1: The Strategy's vision for 2014

- Animals in Great Britain kept for food, farming, sport, companionship, entertainment and in zoos are healthy and treated humanely.
- Our disease status is amongst the highest in the world, and we are able to trade our animals and animal products internationally.
- The costs of livestock health and welfare are appropriately balanced between industry and the taxpayer.
- All disease emergencies are dealt with swiftly and effectively using an agreed approach.
- Consumers value the confidence they have in food produced safely from healthy animals that are well cared for. Consumers and retailers accept that higher standards of animal health and welfare are not cost free.
- Livestock keeping is part of a competitive British farming industry which succeeds by meeting the needs of consumers at home and abroad, producing food safely and to high standards of health and welfare.

Government putting Strategy principles into practice

Since its launch in 2004, Strategy principles (**Figure A1.2**) have guided the development and implementation of policy in the three national administrations. The Government is doing new things, in new and better ways, as a direct result of the Strategy.

Figure A1.2: The Strategy's five principles

1. Working in partnership.
2. Promoting the benefits of animal health and welfare – prevention is better than cure.
3. Ensuring a clearer understanding of the costs and benefits of animal health and welfare.
4. Understanding and accepting roles and responsibilities.
5. Delivering and enforcing animal health and welfare standards effectively.

In March 2005, for example, government published a ten-year Strategic Framework for the sustainable control of bovine tuberculosis (bTB) in GB, directly based upon the Animal Health and Welfare Strategy. Guided by these principles, the framework aims to work in partnership with stakeholders to slow down and prevent the geographic spread of bTB to areas currently free of the disease and achieve a reduction in high incidence areas.

Section A – Chapter A1

In November 2005, a Bovine Spongiform Encephalopathy (BSE) testing regime for cattle was introduced to replace the Over Thirty Month Scheme (OTMS), a scheme which had formerly placed restrictions on farmers as to which animals they could put into the food chain and had cost the taxpayer £3.7 billion. Partnership working towards this goal between government, its agencies and industry was crucial for introducing the new system in good time.

A proactive approach to managing animal health issues – preventing problems before they occur – is another key Strategy principle and in 2005 we made good progress, in partnership with other stakeholders, in promoting the uptake of Farm Health Planning and Animal Health and Welfare Management Programmes across Britain.

A key element of the Strategy's vision is that kept animals are treated humanely and the development of the Animal Welfare Bill for England and Wales and the Animal Health and Welfare Bill for Scotland forms an important step in achieving this. The Bills mark a major milestone in bringing together and modernising welfare legislation for farmed and non-farmed animals. In clarifying the duties of animal owners via the duty of care clauses they are a good example of promoting the Strategy's theme of understanding and accepting roles and responsibilities.

Being prepared for disease emergencies before they happen also forms a crucial part of the Strategy. By having contingency plans in place we successfully tackled the Newcastle Disease outbreak among pheasants in England quickly and effectively during July 2005, involving co-ordinated working across Great Britain. Chapter B1 shows how the three administrations have also been working together to address the risk of avian influenza occurring in the UK.

There are numerous other examples of Strategy principles making a real difference throughout the rest of this Report.

Of course, there are other strategies that direct Government's work and the Animal Health and Welfare Strategy fits within a hierarchy. Defra's overarching aim, for example, is sustainable development. Defra's and the UK's Sustainable Development strategies set the overarching vision and tone for much of our work. Defra's Five Year Strategy, 'Delivering the Essentials of Life'¹, shows how we will deliver our aim of sustainable development, focussing on five key priorities, one of which is "a sustainable farming and food sector including animal health and welfare."

The Strategy also forms part of the *Sustainable Food and Farming Strategy*² which sets an overarching direction for food and farming in England. In Scotland it feeds into the *Forward Strategy for Scottish Agriculture*, while in Wales it contributes to the *Welsh Farming for the Future Strategy*.

¹ The Five Year Strategy can be viewed at <http://www.defra.gov.uk/corporate/5year-strategy/index.htm>

² <http://www.defra.gov.uk/farm/sustain/newstrategy/index.htm>

Industry and others playing their part

The Strategy gives all stakeholders – and not just government – a framework to plan strategically for a better future that both advances their interests and improves animal wellbeing generally. During 2005, stakeholders continued to develop animal health and welfare sub-strategies for their own sectors. The British Pig Executive (BPEX), for example, has led a partnership to launch a Research and Development Strategy for the pig sector and there has been ongoing development of the British Equine Veterinary Association's (BEVA's) Equine Health and Welfare Strategy.

Several industry partnerships were also set up during 2005. Cattle farmers, markets and vets worked together with Defra and the devolved administrations, for example, to develop and launch an awareness-raising campaign for Johnes disease, a disease of cattle which causes distress to the animal and lowers productivity. The government is currently working with key stakeholders to introduce a similar partnership approach to raise awareness about another cattle disease – Bovine Viral Diarrhoea (BVD).

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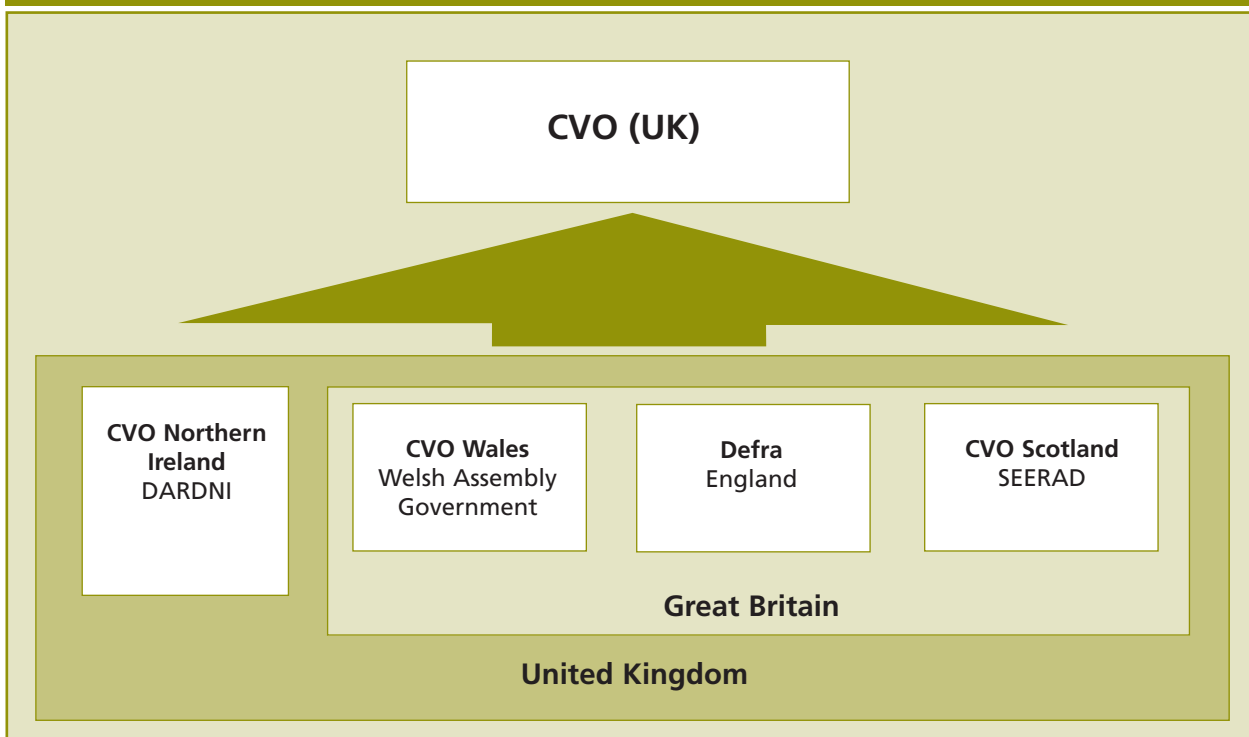
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A2: Working with our strategic partners

Defra has a responsibility to ensure that its decisions and delivery mechanisms are robust to meet the demands of modern day government. Central to this is the Department's pivotal role as strategic policy developers and its relationship with key delivery partners. These 'new' roles and relationships will continue to develop and evolve, particularly over the next couple of years.

Devolved administrations

Figure A2.1: CVO (UK)'s relationship with devolved administrations



Animal health matters are fully devolved to the national administrations of GB. The CVO (UK) meets with the devolved administrations of Scotland, Wales and Northern Ireland to ensure each Department is kept updated on policy issues of mutual interest and help ensure consistent policy application across national boundaries. The CVO (UK) is responsible for animal health and welfare issues in England and overseeing developments in the UK, and representing the UK's interests internationally.

The impact on the devolved administrations of the State Veterinary Service (SVS) gaining executive agency status continues to be assessed and addressed through the setting up of new working arrangements which are still bedding in.

Delivery partners

In January 2005, the CVO chaired a meeting with heads of delivery partners. This meeting provided the first opportunity to share Defra's Delivery Strategy with key deliverers in the area of animal health and welfare and to discuss priorities for the year. It was agreed that this group should meet on an annual basis.



Heads of Delivery Partners Meeting

Arrangements for inspecting and enforcing animal health and welfare regulations involve a number of delivery bodies and there is a clear need for better coordination between them. We will be carrying out a review of our delivery arrangements, starting early in the new year, to look at the roles and responsibilities of our main delivery partners. The review was announced in November as part of Defra's Farm Regulation and Charging Strategy. It ties in with the Hampton Review on inspection and enforcement which recommended the creation of an Animal Health Inspectorate.

The State Veterinary Service

The role of the State Veterinary Service

The SVS is a GB wide organisation which helps to deliver a sustainable food and farming sector, protects the health and welfare of farmed animals, and minimises the impact of animal health issues on public health.

Operating from a network of Animal Health Divisional Offices and headquarters units, the SVS carries out a range of responsibilities, many of a statutory nature, including:

Section A – Chapter A2

- continual improvements in farmed animal's health and welfare;
- eradication of existing disease through the implementation of specific animal and public health policies;
- preparing for, and managing the operational response to, outbreaks of notifiable animal disease;
- facilitating international movement of animals and animal products, including inspection prior to, and during, transit;
- enforcing animal health and welfare legislation on behalf of Defra, the Scottish Executive and the Welsh Assembly Government; and
- recruiting, training and directing the work of approximately 7,000 Local Veterinary Inspectors who work as agents in delivering tasks such as testing cattle for tuberculosis (TB), certification of animals and animal products for export, and inspecting animals held in quarantine.

Implementation and enforcement activities include investigation, inspection and surveillance, licensing, certification and registration.

The Agency also contributes to evidence-based policy development by providing advice on the deliverability, implementation and effectiveness of existing policies and new proposals.

In fulfilling its responsibilities, the SVS works closely with key stakeholders across the agricultural sector, including farmers, local authorities, private veterinary surgeons, market operators, transporters, slaughterhouses and many other groups, as well as the general public.

SVS becomes an Executive Agency

In accordance with Defra's Delivery Strategy, which provides for the separate management of policy and operational functions, the SVS was created as an Executive Agency on 1 April 2005.

As an agency, the SVS is able to determine its own vision, and (with Defra and the Devolved Administrations) to review and clarify its role and priorities.

The first nine months of agency status has seen a restructuring of the organisation to better align with Government Office Regions, to improve strategic co-ordination with other delivery partners operating within these regions. Restructuring has also seen the development of a Corporate Centre, based largely at a headquarters in Worcester.

Agency status has also enabled the SVS to focus on developing its delivery capabilities to the full. This has initially meant focusing on enhancing operational management systems, embedding the new management structures, improving performance reporting and developing relationships with stakeholders.

During this period the SVS successfully managed two incidents of exotic disease, and has been actively involved in strengthening arrangements aimed at preventing, or managing, an outbreak of avian influenza in GB.

The first Annual Report of the SVS as an Executive Agency will report on its performance and be published in summer 2006. Information about the SVS including its management structure and location of its offices can be found at www.svs.gov.uk and the annual report will be available there.

The Veterinary Laboratories Agency

The Veterinary Laboratories Agency (VLA) provides Defra and other government customers with specialist veterinary research, consultancy, surveillance and laboratory services. The Agency comprises of a regional network of 16 laboratories including one in Scotland, two in Wales, a central research and diagnostic testing facility near Weybridge in Surrey, and two joint surveillance centres at the London and Liverpool veterinary schools.

In 2005, the VLA played a key role in the preparedness for an outbreak of avian influenza as the international, EU Community and national reference laboratory for the disease. VLA scientists also played a significant role in containing the Newcastle disease outbreak in Surrey during July 2005.

The VLA also opened a new science laboratory for work on tuberculosis and high throughput serology. A unique feature of the laboratory is that it can be switched to operate at a higher containment level should a disease emergency occur.

Information about the VLA, its management structure and Annual Report can be found at www.vla.gov.uk

Veterinary Medicines Directorate

The Veterinary Medicines Directorate (VMD) aims to protect public health, animal health, the environment, and promote animal welfare by assuring the safety, quality and efficacy of veterinary medicines.

A key highlight for 2005 was the Veterinary Medicines Regulations 2005 coming into force on 30 October. These Regulations transpose into UK law the amended European Union (EU) provisions resulting from the Review 2001 and recommendations from the Marsh and Competition Commission Reports. Following a Better Regulation Review, the Regulations revoke UK legislation on veterinary medicines made under the Medicines Act 1968.

Information about the VMD and its work, including the Business Plan and the Annual Report and Accounts can be found at www.vmd.gov.uk

Other partners

We have been working closely with the Meat Hygiene Service (MHS) in setting priorities based on risk assessment across the wide range of delivery functions they perform on behalf of Defra and the Food Standards Agency. We are seeking to strengthen our relationships and improve accountability. The CVO has been appointed as Adviser to the MHS Board.

An updated version of the Framework Agreement between Animal Health and Welfare Directorate General in Defra, local authorities and the Welsh Assembly Government for the delivery of services in animal health and welfare was issued in February 2005. This agreement promotes the use of consistent risk assessment in deciding priorities for delivery. Local enforcement plans are agreed between local authorities and Divisional Veterinary Managers of the SVS.

Consumer engagement

Consumer views are key to the Animal Health and Welfare Strategy and we are working with consumer and mass membership organisations to share perceptions and contribute to balanced decision-making. We have been using public opinion surveys and have appointed lay and consumer members to relevant committees.

The CVO has given special attention to this co-operation and in September 2005, she convened the first of a series of regular meetings on animal health and welfare with consumer organisations and representatives. Discussions ranged from the strategic issues of priority setting and animal welfare to dealing with specific animal disease and associated risks, and the best methods for reaching consumer views.



Meeting of consumer representatives and membership organisations with the CVO.

A sense of partnership has developed with clear progress made, for example a consumer organisation's statement on the acceptability of Foot and Mouth vaccination, influence achieved in the EU on Bovine Spongiform Encephalopathy (BSE) controls, dissemination of information on animal welfare and a better tailoring of consultation methods to consumer needs.

A website dedicated to consumer issues is in preparation.

Veterinary Head of Profession

In January 2005 the CVO was officially designated the Veterinary Head of Profession (VHoP) for veterinary surgeons in government by Sir Andrew Turnbull, Head of the Home Civil Service. The VHoP initiative extends to all veterinarians who are serving civil servants employed by government departments or agencies and who are current members of the Royal College of Veterinary Surgeons (RCVS).

The VHoP is supported by a Government Veterinary Surgeons (GVS) Steering Group whose membership currently consists of senior veterinary staff from the following government departments and agencies

- Centre for Environment, Fisheries and Aquaculture Science (CEFAS)
- Department for Environment, Food and Rural Affairs (Defra)
- Department for International Development (DfID)
- Food Standards Agency (FSA)
- Home Office
- Meat Hygiene Service (MHS)
- Ministry of Defence (MoD) (Civilian Vets)
- Scottish Executive for Environment and Rural Affairs Department (SEERAD)
- State Veterinary Service (SVS)
- Veterinary Laboratories Agency (VLA)
- Veterinary Medicines Directorate (VMD)
- Welsh Assembly Government (WAG)
- The Department of Agriculture and Rural Development Northern Ireland (DARDNI) attend as observers.

Strategic aims and objectives

The VHoP aims to be a visible champion for the contribution made by veterinarians in government. Supported by colleagues within the GVS Steering Group, the VHoP will:

- Represent the role of vets in government through their engagement with central government, external organisations and professional bodies and other stakeholders.
- Establish a learning and development framework for specialist veterinary skills, which includes opportunities for continuing professional development (CPD), interchange and enables succession by veterinarians through the government service.
- Establish an effective communications network through events management, visits, website and other available media.
- Promote the role of the GVS and the work of vets in government to the wider government and veterinary community

Progress

GVS Conference 2005

This took place at the VLA in Weybridge on 7 June 2005, and was jointly hosted by the CVO and Professor Steven Edwards (Chief Executive of the VLA). The aim of the conference was to introduce participants to the VHoP initiative and provide them with an overview of the roles of veterinary surgeons within government.



Delegates of the GVS 2005 Weybridge Conference on a tour of VLA's facilities



A VLA farm visit during the GVS 2005 Weybridge Conference

Visits to UK Veterinary Colleges

A series of visits between the senior veterinary staff in government and veterinary colleges in the UK is currently underway. The purpose of these visits was to establish effective dialogue between government and the colleges following an informal meeting



With Debby Reynolds (CVO (UK)) outside the Cambridge Veterinary School are: (left to right) Dr James Wood, Prof Ian McConnell, Prof Duncan Maskell, Mr Mike Herrtage

with the Deans in 2004. Cambridge Veterinary School and the University of Bristol, Department of Clinical Veterinary Science were visited in 2005. One outcome from these visits will be the formation in 2006 of a GVS Vet School liaison group.

Veterinary Skills and Expertise Framework

The Cabinet Office has recently introduced the Professional Skills for Government (PSG) initiative, which aims to provide all members of the Civil Service with the skills and experience needed to design and deliver 21st century services. As part of PSG, Heads of Profession across Government have been asked to produce a framework for the skills needed by members of their respective profession. The Veterinary Head of Profession is responsible for a framework which identifies those areas of skill and knowledge building which are relevant and specific for veterinary surgeons in government.

Continuing professional development

A CPD Working Group was convened in September 2005 to consider key issues for CPD in relation to veterinary surgeons in government under the VHoP initiative. This is against the backdrop of the proposed modernisation of the Veterinary Surgeons Act which could see a move towards competence based mandatory CPD.

A statement on responsibilities for CPD has been formulated to support government vets and their managers to comply with the current CPD requirements set by the RCVS.

More information about the GVS can be found on the GVS website at www.gvs.gov.uk

Vets and Veterinary Services Working Group

We have been working closely with the veterinary profession to develop a more strategic overview of issues facing farm animal veterinary practice, reflecting the key role that vets play in the delivery of the Animal Health and Welfare Strategy.

Following discussions with the RCVS, the British Veterinary Association (BVA) and the National Farmers Union (NFU), we formed a Vets and Veterinary Services working group which held its first meeting in April 2005. It will work to establish a more effective working partnership between the veterinary profession, Government and livestock keepers, taking account of the challenges that face the profession and the changing needs of its customers.

This work is still in its formative stage, however, one of our priorities is to establish a better evidence base on the availability of farm animal veterinary services. As part of this project, Defra is working with the RCVS on the development of its 2006 manpower survey of the profession.

The Veterinary Surgeons Act 1966

Since the Veterinary Surgeon's Act was passed there have been major developments both in the veterinary profession and the way veterinary services are delivered. Public expectations are also higher and there is demand for greater transparency in the way that regulatory bodies operate and deal with complaints. We are waiting for parliamentary time to introduce a draft Bill to replace the Veterinary Surgeons Act 1966 to modernise the way in which the veterinary profession is regulated. In the meantime, we are following developments in the regulation of other professions. The Royal College of Veterinary Surgeons have recently completed a review of the Act and published their proposals for change.

The Veterinary Surgery (Testing for Tuberculosis in Bovines) Order 2005 came into force on 15 July 2005. This permits non-veterinary staff of the SVS to be trained in intradermal skin testing techniques and take part in a lay testing pilot programme, under the direct supervision of a veterinary officer. Final decisions on the possible introduction of lay TB testing will depend on the results of the pilot.

A3: UK Presidency of the European Union

Between 1 July–31 December 2005, the UK held the Presidency of the European Union (EU) having taken over from Luxembourg. During this time we ensured progress across the continuing EU agenda in the area of animal health and welfare. We continued to work closely with Luxembourg, as well as Austria, who follow the UK Presidency, to ensure continuity in addressing the key challenges that face Europe today. We have also worked closely with the Commission, the European Parliament and the other Member States.

Main achievements

The UK Presidency successfully reached agreement at Agriculture Council in December 2005 on a new Directive updating Community controls on avian influenza. In light of the evolving global situation and heightened political and public interest, there was a great deal of importance attached to concluding work on this new Directive, and its accompanying amendment to the Veterinary Fund. The new Directive, as well as introducing new measures for controlling high pathogenic avian influenza, introduces for the first time, controls and surveillance for low pathogenic avian influenza.

The UK Presidency also played a leading role in supporting the Commission on focusing global effort on avian influenza. We encouraged our international partners to focus on combating avian influenza at source and to use existing key multilateral organisations who lead on this issue (including the Office Internationale Epizooties (OIE), World Health Organisation, World Bank, and United Nations (UN) Food and Agriculture Office). Within the EU, Defra also developed a Presidency plan to focus on preparedness for human pandemic and avian influenza, and ensure that EU competent authorities for both human and animal health have a clear steer should the risk manifest itself.

In September, at the informal meeting of Chief Veterinary Officers in Edinburgh, the Presidency held a successful workshop to provide strategic direction to work on the future Community Animal Health Policy, and agreed conclusions which will inform further work by the Commission on developing this policy for 2007–2013. This is the first time that this kind of strategic approach has been adopted in the area of Animal Health and Welfare. It will inform Community expenditure on disease control from 2007–2013 and beyond.

The UK also took forward negotiations on the Transmissible Spongiform Encephalopathies (TSE) Road Map, together with its related Regulation, and revisions to controls on both welfare of meat chickens and fish health. On the TSE negotiations we finalised Presidency conclusions on the TSE Road Map. This also includes a timetable for lifting of the UK beef ban and, although itself not Presidency business, formed part of our negotiation with the European Parliament.

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On the welfare of meat chickens, we shaped the proposed revisions to ensure that they will reduce the burden of administration (part of our Presidency better regulation objective). On fish health, we made good progress on identifying the major issues that need to be addressed by the revision to the current controls. We also reached Presidency conclusions on the Commission's report on animal by-products.

On third country issues, negotiations took place on existing and new Veterinary Agreements with third countries, including several meetings with Russia. These agreements are particularly important as they act as a conduit for difficult issues between the Community and third countries, and facilitate the agreement of mutually acceptable standards for import/export. They also allow the 25 Member States to benefit from negotiating as a Community instead of as individual Member States. Much progress was also achieved on resolving Sanitary and Phytosanitary (SPS) export related issues.

Building on our success

Negotiations are expected to conclude on both meat chicken welfare and fish health during the Austrian Presidency. Further work on the TSE Roadmap will result in agreement to amendments to the current TSE Regulation, alongside the lifting of the export embargo on UK beef. The Commission, following reflection on Presidency conclusions on the Animal By-Products Report, are expected to bring forward proposals to amend the Animal By-Products Regulation.

Work will continue on an Animal Welfare Action Plan for the Community. We also expect the Commission to conclude its work on a Community Animal Health Policy, as driven forward by the UK during its Presidency.

A4: Animal health and welfare research

Research funded wholly by Defra or in collaboration during the year has been designed to provide scientific inputs to evidence based policies in all major programmes aligned with the objectives of the Animal Health and Welfare Strategy. In recognition of the potential delay between research output and the policy need for evidence there has been extended focus on foresight and future needs. This has been done increasingly in collaboration with other government Departments and devolved administrations to ensure that research on cross-cutting responsibilities and other initiatives are integrated. The processes used in the definition, selection and procurement of research are steered by the Guidelines on Scientific Analysis in Policy Making issued by the Office of Science and Technology in 2005.³

The allocations of research funding within various programmes for the financial year 2005/06 are listed in **Table A4.1**. Further details of animal health and welfare research projects funded by Defra can be found at www.defra.gov.uk/science.

Developments within research programmes include:

- Study of cases of BSE in cattle since the reinforced feed ban of August 1996 have not identified any change in the nature of the disease or host genetic associations with susceptibility or resistance to the disease.
- Research has provided evidence that BSE could be transmitted from one generation to the next if the disease was to occur in sheep. Similarly, there is some evidence that scrapie infection can be transmitted through the environment without direct contact between infected and non-infected sheep.
- The search for a test to identify TSEs in live animals has led to the identification of accessible rectal tissues in sheep which become positive during the course of the disease.
- In collaboration with the BBSRC work is underway to better understand the transmission characteristics of avian influenza in poultry and how the pathogenesis of the viral strain can affect its transmission characteristics.
- The speed of detection is of the utmost importance when seeking to control an outbreak of disease, such as FMD. The use of molecular tools to improve tests and the speed with which we are able to detect and monitor the presence of disease has been and continues to form an integral part of the research programme. Polymerase Chain Reaction (PCR) tests have been developed and validated for many notifiable diseases, including FMD, CSF and recently avian influenza.
- Part 1 of the Survey of Health and Pesticide Exposure (SHAPE study) was published on the Defra website in June 2005. This survey focused on possible associations of symptoms with organophosphate exposure in people.

³ www.ost.gov.uk/policy/advice/index

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- New research has been commissioned to study the incidence and risk factors for injection site sarcomas in cats and the possible association with vaccination or the administration of veterinary medicines.
- A summary of the review of the research programme on antimicrobial resistance was published on the Defra website in November 2005.
- The increasing problem of Methicillin Resistant Staphylococcus Aureus (MRSA) in human medicine has raised concerns that animals may be involved in the spread of these infections. Two projects have been commissioned to study the incidence of MRSA in cattle and the association of MRSA in companion animals with the human health care sector.
- Research has resulted in the development of an effective humane killing method for the emergency slaughter of poultry on-farm.
- Electrical parameters required to produce a consistent stun in the commercial slaughter of poultry have been identified.
- A study has developed a Lameness Control Plan to address specific cattle lameness problems and improve welfare on individual farms.
- Risk factors to reduce the prevalence of broiler leg problems have been identified.
- New research was commissioned to study the effects of the application of bits and spectacles in game birds which is the first project to be taken forward in this area in Defra.

Working in partnership

Partnership principles have led to improved industry focus on research on non-statutory diseases through the recently formed Poultry Disease Research Advisory Group. Industry collaboration through the Ruminant Diseases Research Advisory Group and the Committee for Aquaculture Research and Development (CARD) has contributed to the definition of research requirements and the selection of proposals in ruminant health and fish welfare respectively. To improve collaboration in the UK, an animal diseases research funders forum involving Defra, Scottish Executive Environment & Rural Affairs Department (SEERAD), Department of Agriculture & Rural Development Northern Ireland (DARDNI), Welsh Assembly Government (WAG), and the Biotechnology and Biological Sciences Research Council (BBSRC) has been established. In addition, in 2005, six animal health and welfare projects were supported jointly with the BBSRC through the Government Partnership Award Scheme.

Defra is also leading on the formation of an Animal Health (and Welfare) Working Group under the EU Standing Committee on Agriculture Research. The aim of the Working Group

is to provide a forum for improved prioritisation and procurement, creating the necessary critical mass and focus to deliver the animal health and welfare research needs of policy makers and the European livestock industry.

Veterinary Training and Research Initiative

Good progress is reported from the Veterinary Training and Research Initiative (VTRI) launched in 2004. This major initiative is designed to strengthen the national veterinary research infrastructure in order to sustain future capability to prevent and control infectious diseases. By encouraging research awareness the VTRI has opened up opportunities for personal development in research which will benefit the veterinary profession and future requirements for animal health. Linked to veterinary colleges across the country the initiative is supporting six Research Fellows. Within their programmes there are six post-doctoral scientists, 76 post-graduate scientists and 25 sixth form scholarships. There are nine continuing professional development outreach programmes and 86 undergraduate (vacation) projects within the scheme. The VTRI is jointly funded by Defra, the Higher Education Funding Council for England and the Scottish Funding Council.

Animal diseases

The continuing satisfactory progress of control measures introduced to protect public health and animal health from Bovine Spongiform Encephalopathy (BSE) is reflected in the changing nature of the Departmental research programme. Funding for this programme is expected to undergo a managed reduction over coming years in line with the completion of existing projects and the continued provision of scientific data in support of risk analyses for the eventual modification and removal of controls.

Significant funding continues to be directed at the control of Transmissible Spongiform Encephalopathies (TSE) in cattle and sheep and to the control of bovine tuberculosis (bTB).

Research into TSEs in small ruminants continues to provide information and scientific evidence contributing to the National Scrapie Plan (NSP), and studies are leading to a much deeper understanding of the nature and characteristics of these diseases. There is a substantial body of research in small ruminants across the EU and the UK is a major contributor. Co-ordination of this work has benefited from EU funded concerted action known as Neuroprion and the Small Ruminant TSE Network, which brings scientists together including key specialists from the UK. Recent developments with diagnostic tests and their application to surveillance has led to the detection of previously unrecognised forms of TSE in small ruminants. During the year research has been put in place to investigate the science and significance of these findings.

External expert advice is being used to assist Defra with the direction of the complex and expanding research programme on issues associated with bTB. The TB Strategic Framework sets out the Science Delivery Plan which also gives details of the current government-funded research programme on bTB. For guidance, recommendations are received from the Ecology

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Projects Advisory Group, the Vaccine Projects Advisory Group and the Cattle Pathogenesis Steering Group. A summary of current scientific knowledge on bTB has also been published this year alongside the strategic framework. It is recognised that the development of vaccines to protect cattle or wildlife against TB is a major challenge equivalent to that faced by scientists in human medicine. Collaboration with medical researchers has been reinforced and vaccine candidates which are being considered for human clinical trials are also feeding into trials in cattle.

To provide independent advice to Defra in the event of an outbreak of Foot and Mouth Disease (FMD), a modelling consortium has been created which will also act as an interface between modelling advice and policy guidance. The role of the consortium has been broadened in scope to include avian influenza. Longer term modelling needs are being considered and met within research programmes, with projects to examine different control strategies and their effectiveness during an outbreak. An important collaboration between the Meteorological Office and the Institute for Animal Health is being supported to understand better and predict the influence of weather patterns on the spread of disease in an outbreak situation. From risk assessments on the threat of importing notifiable diseases into the country, knowledge gaps have been identified concerning the survival of various notifiable diseases under different environmental conditions. Research is in place to answer some of these unknowns with regard to avian influenza, Newcastle Disease (ND) and Classical Swine Fever (CSF).

Defra are the sponsor Department for the current Office of Science and Technology (OST) Foresight Project to examine the detection and identification of infectious diseases. The project is cross-disciplinary, covering human, animal and plant health, and is taking a global perspective, focusing on the UK, Africa and China.

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Table A4.1: Major animal health and welfare research activities and associated budget allocations for the financial year 2005/06

Veterinary Science Programme	Includes research on	Allocation for 2005/06 (£'000s)
Statutory and exotic diseases	Bovine tuberculosis	5,807
	Foot and mouth disease	2,400
	Swine fever	645
	Rabies (and related viruses)	600
	Brucella	280
	Influenza and Newcastle disease	685
	New and emerging diseases	270
	Others (including VTRI)	3,579
Zoonoses	E.Coli O157	400
	<i>Salmonella</i>	1,300
	<i>Campylobacter</i>	800
	Others	200
Transmissible spongiform encephalopathies (TSE's)	BSE in cattle	1,600
	TSEs in sheep	8,800
	Diagnostics	3,200
Endemic diseases and alternatives to pharmaceutical control	Bovine mastitis	192
	Non-statutory viral disease	809
	Non-statutory parasitic disease	685
	Antimicrobial resistance	840
	Others	74
Veterinary medicine	Veterinary medicine and immunologicals	2,065
Animal Welfare	On-farm	2,127
	Slaughter	512
	Transport	761
	Companion animals & game birds	135
	Total	38,766

A5: Veterinary Surveillance Strategy

The Animal Health and Welfare Strategy aims to improve the health and welfare of animals kept by man and to protect public health from animal disease. The UK Veterinary Surveillance Strategy (VSS) is an integral part of this. The basis for disease surveillance is information, collected from many different sources, used to assist in earlier detection of potential problems. Earlier detection will allow earlier intervention helping to reduce both the cost and impact of disease spread.

Veterinary surveillance is defined as 'the ongoing systematic collection and collation of information about disease, infection, intoxication or welfare in a defined animal population'. This is then used to assess and monitor threats to animal or human health.

Background

The purpose of veterinary surveillance is to detect changes in the effects of disease in the animal population, in particular;

- outbreaks of exotic disease;
- appearance of a new disease, particularly potential zoonoses;
- changes in occurrence or effects of endemic diseases.

This can be achieved by two methods; targeted surveillance collects specific information about a defined disease or condition whilst scanning surveillance continuously monitors the endemic disease profile so that changes can be detected.

The VSS aims to deliver faster, better-targeted disease prevention and control measures via earlier detection of animal-related threats; open, transparent and defensible prioritisation of surveillance activities and a well-defined evidence base.

Progress to date

Significant progress has been made in 2005 with the development of existing projects and the launch of several new initiatives.

Pilot veterinary sentinel network

The VSS recognised a need to expand the veterinary surveillance network. One gap is that much clinical information held by veterinary surgeons is not collated or shared unless material is submitted for laboratory examination. A sentinel network should be able to collect information direct from the veterinary surgeons of a representative selection of farms, and provide estimates of the prevalence of all endemic diseases – not just those which are monitored through laboratory test results. At a meeting in November 2004, the Quality Assurance Business Assurance Group concluded that a pilot study should be conducted to explore whether a veterinary sentinel network can be established. This will accurately represent the livestock population, and what useful information is practical and economical to collect. The pilot is restricted to two species, cattle and pigs, and to two geographical areas, Yorkshire and East Anglia. The pilot begins with the cattle sentinel network in Yorkshire, and the pig sentinel network following in 2006 in East Anglia.

A representative sample of farms in Yorkshire, stratified by herd size, were identified with a view to recruiting 30 to participate in the pilot. The private veterinary practitioners involved with these farms were identified and asked firstly if they would be interested in participating in the pilot project and if so to contact the farm(s) to encourage the participation of the farmers. Ninety-five per cent of the practices approached agreed to participate and 30 farms have been recruited.

A workshop of the selected vets took place in November 2005 with the first pilot sentinel visit taking place in December 2005. Information being collected includes both farm and practice level data. Each farm will be involved with the project for six months and receive three surveillance visits by their practitioners over the period.

More information on the pilot veterinary sentinel network project can be accessed at <http://www.defra.gov.uk/animalh/diseases/vetsurveillance/gettinginvolved.htm>

Equine surveillance project

As part of the VSS, the species-specific quarterly surveillance reports published by the Veterinary Laboratories Agency (VLA) and the Scottish Agricultural College (SAC) have now been extended to include a quarterly report for horses.

The Equine Surveillance Reports are a combined initiative between Defra, the Animal Health Trust (AHT) and the British Equine Veterinary Association (BEVA). The reports are an important step towards improving equine disease surveillance by collecting equine disease data arising from a broad network of different laboratories and specialist equine practices throughout GB. This allows a unique insight into equine disease occurrence on a national scale. These reports are a clear example of how working in partnership to achieve common goals can and does work.

The reports published in 2005 can be accessed at <http://www.defra.gov.uk/animalh/diseases/vetsurveillance/vsinfo.htm#who>

Johne's disease project

A cross-sectional survey of the UK dairy herd for Johne's disease was designed in a collaborative project between VLA, SAC, and Veterinary Research Division of Department of Agriculture and Rural Development Northern Ireland. Besides estimating the herd-level prevalence of infection, the project will enable the validation of a range of diagnostic test methods under UK conditions. The design was approved by the Surveillance Group for Disease and Infections of Animals and the devolved administrations of Scotland and Northern Ireland will contribute proportionately to the funding – an example of the Working in partnership principle envisaged in the Animal Health and Welfare Strategy. Field work is expected to begin in late summer 2006.

Prioritisation process for animal health and welfare issues

This project will provide the structure and tools to inform and enable evidence based, socially and economically appropriate distribution of government funds for animal health and welfare issues. The project will not determine actual distribution of funds, but will design a system by which funding decisions can be made using quality assured, scientific evidence, which also considers legislative and political factors. Requests for funding exceed available funds and it is intended that this method will help to allocate finite resources in a manner, which maximises overall public utility.

The project has two parts. The technical component seeks to design and implement a decision support tool to capture, quantify and present scientific and other objective evidence that will enable each issue to be ranked as to its importance in the context of the Animal Health and Welfare Strategy. The governance component seeks to design, with stakeholders, an agreed process for this evidence to be considered and contribute to funding decisions both in bids for funding and in the distribution of funds.

Following public consultation two key decisions have been reached. These are that disease profiles will be used to guide prioritisation and that the relative importance of the issues should be considered separately against the four reasons of government intervention as defined in the Animal Health and Welfare Strategy.

Disease profiles

Disease profiles are being developed to support a transparent system of prioritisation based on risk and impact analyses. The profile for each disease contains a comprehensive set of information in a standard format. It includes clinical and laboratory details, the legislative and policy approach to the disease, surveillance information, and the impact on different stakeholders. Much of this information is not readily available together in a single place. The profiles will make it possible to compare different diseases on a like for like basis.

The profiles are intended to be held in a database. The system will present the information in a flexible range of pre-determined and bespoke reports. This will enable a range of stakeholders to extract the information they need about a single disease, or about particular features of several diseases.

The high-level design of this system is now complete. Pending its delivery, disease profiles will be published as documents on the website as they become available. By the end of the year, four profiles had been published: those for rabies, avian influenza, toxoplasmosis and *Campylobacter*. Six more should be published early in 2006; a further ten have been commissioned.

Rapid Analysis and Detection of Animal-related Risks

Rapid Analysis and Detection of Animal-related Risks (RADAR) is an information management system, which has been developed to collect and collate veterinary surveillance data from different sources around GB. It provides specialist tools for the analysis of surveillance data and publishes reports highlighting the risks and distribution of veterinary threats to public and animal health. RADAR is the technical solution for delivering the VSS.

The first stage of RADAR was released in March 2005 and made information available on the GB cattle population and cases of *salmonella*. In November 2005 the schedule for delivery was amended to bring forward the capture of poultry data into RADAR, in view of the potential threat from avian influenza. Additional data will be progressively released and will include population data on other livestock, movement data, statutory surveillance programme information and information about the occurrence of some diseases.

RADAR development is phased between now and 2013. The next major development will be the prioritisation process, which will decide which information should be held on RADAR. Once the system is complete it will allow new and powerful analyses to be carried out. By collecting data gathered by systems across the UK, it will allow disease data and a range of disease factors to be compared directly with each other and against the population of animals. RADAR will be central to reporting what diseases exist and to measuring how much disease there is and whether or how diseases are spreading.

Quality assurance across the strategy

A Quality Framework for veterinary surveillance activities including a programme of work for assuring the quality of all veterinary surveillance outputs has been written in close conjunction with stakeholders. Its aim is to help interested parties better judge the quality of surveillance data and the robustness of any interpretation placed on reports produced from these data.

We are working towards extending Defra's existing Quality Assurance (Joint Code of Practice) and peer review principles that are currently applied to Defra's Research and Development programme to a wide range of VSS research and outputs.

Quality statements currently describing RADAR data sets and reports are being tailored to other VSS outputs. We have been exploring different ways these statements can be made more meaningful for customers of these reports.

Section B: Protection of public health: diseases transmissible to humans and food safety

B1: Avian influenza

The UK remains officially free of avian influenza. However, highly pathogenic avian influenza (HPAI) has been circulating in south east Asia for some time, and in 2005 moved westwards across Asia to Russia and then into eastern Europe, with more recent outbreaks confirmed in Russia, Ukraine, Romania, Bulgaria and Turkey. The UK has been working on policies for some time to deal with such an event as highly pathogenic or low pathogenic avian influenza. The VLA, VMD and SVS, several other government Departments and a wide range of external stakeholders (including representatives from industry, and veterinary and welfare organisations).

Risk assessment

Defra has produced seven risk assessments on the threat to GB from avian influenza outbreaks in other countries since January 2004, based on the collation of world disease surveillance data from the OIE and European Commission. The latest in 2005 was published on 8 November 2005. It assessed the threat as increased but still a low risk of imminent introduction to the UK although there is a high risk of further global dispersion. There is circumstantial evidence that migrating wild birds spread H5N1 and Defra has continued to work with migration experts on flyways and to review the risk assessment in the light of new developments.

Essex quarantine incident

On 21 October it was announced that a case of HPAI had been found in birds held in avian quarantine facilities in Essex. On 23 October 2005 this was confirmed as H5N1. The premises concerned contained two consignments of exotic birds from Surinam and Taiwan. The original identification of H5N1 on 21 October 2005 was made from a pool of tissues derived from a Pionus Parrot (Surinam) and a Mesia (Taiwan). It has not been possible to say whether the virus isolated came from the parrot tissue or the mesia tissue or both. However, in the light of the other evidence the balance of probabilities is that the source was the mesia sample.

The epidemiological report on the case was published on 15 November 2005 and indicated that within the species documented as coming from Taiwan, only the mesias were infected with H5N1 and 53 out of 101 birds had died. Infection with H5N1 was transmitted between the mesias, but there was no evidence of transmission to other species in the facility including the sentinel birds. The H5N1 strain is most closely associated with a virus isolated from ducks in China early in 2005. This is consistent with Defra's working hypothesis of 23 October 2005 that the likeliest origin of the infection was the birds from Taiwan. The quarantine case did not affect the UK's avian influenza disease free status.

The Defra Management Board commissioned a review to learn lessons from the Department's experience of handling this quarantine incident. The report⁴ provides a useful analysis to help develop systems and procedures for responding to events requiring rapid decisions on policy, and which generate large scale parliamentary and media interest.

⁴ <http://www.defra.gov.uk/animalh/diseases/notifiable/disease/ai/policy/response.htm>

Independent review of avian quarantine arrangements (Dimmock report)

Following the discovery of H5N1 in quarantine in October 2005, an independent review of avian quarantine arrangements was carried out. Chaired by Professor Nigel Dimmock, the review report was published on 15 December. Defra is discussing with stakeholders and EU partners how to take forward the recommendations. The Dimmock report concluded that imports of captive birds should be permitted to continue. Banning imports of captive birds might divert imports to illegal, unquarantined, channels which would pose a greater risk. Therefore, as long as legal imports are permitted, quarantine is a necessary health protection measure. Work is going on to find a longer-term solution to the importation of wild birds.

UK surveys for avian influenza in domestic poultry and wild birds

The purpose of avian influenza surveillance in domestic poultry is to detect the incidence of infections with avian influenza virus subtypes H5 and H7 in different species of poultry.

The objectives of wild bird surveillance are to:

- provide an early warning mechanism for the introduction of avian influenza strains that may be introduced into poultry flocks from wild birds; and
- contribute to the knowledge on the threats of avian influenza to animal health from wildlife.

Wild bird surveillance has led to a strengthening of relationships between veterinary networks, health authorities, bird organisations and migration experts.

National avian influenza survey in domestic poultry

The UK national avian influenza survey in domestic poultry has been running annually between September and December since 2003. Following random selection from one of six categories (turkeys, domestic fowl, ratites, quail, ducks and geese) poultry on premises throughout the UK are sampled by staff from the SVS. These blood samples are then tested at VLA Weybridge for the presence of antibodies to avian influenza viruses of subtype H5 or H7.

The survey is designed so that poultry species and management systems that are at greater risk from infection are sampled. Results from the surveys have all been negative for avian influenza viruses.

During 2005 approximately 5,000 blood samples, from 435 premises, were tested. In October, samples taken from a number of geese on a premises in south west England tested positive for antibodies to H5N2 and H5N7. Movement restrictions were served on the premises and a veterinary inquiry was initiated. Clinical examination revealed that the geese were healthy; further sampling and laboratory tests did not isolate avian influenza

viruses. The presence of infection with avian influenza viruses was ruled out. It is likely that the positive antibody result was due to previous exposure to low pathogenic avian influenza (LPAI) viruses. It is not uncommon to find LPAI viruses in wild birds; these geese had a high level of exposure to wild birds. All other samples taken during the survey were negative.

Surveillance for avian influenza viruses in wild birds

Migratory wild birds are considered to be one of a number of potential risk factors for the introduction and spread of HPAI.

Following discussion and agreement by the Standing Committee on the Food Chain and Animal Health (SCoFAH) in Brussels, new wild bird surveillance arrangements were put in place with our partners on certain species of migratory water birds.

The mechanisms for reporting findings of avian influenza in the wild bird survey were announced in a Ministerial statement on 1 December. Isolations of LPAI virus types (not H5 or H7) will be reported via the Defra website, as will negative results. Findings of LPAI H5 or H7 virus types will be discussed with Department of Health colleagues, briefing with a clear explanation of the findings prepared, and information will be posted on the Defra website. Stakeholders will also be updated.

If there is an isolation of HPAI virus of any type, Department of Health colleagues will be informed and an announcement will be made to both Houses of Parliament. There will be thorough communication of the facts to the public and early stakeholder meetings arranged to ensure key messages are understood. Regular communication will be key as the disease strain is identified and investigations reveal more information.

Defra sought expert advice from ornithologists, wild bird groups, migration experts and meteorologists to assess the risk posed by migratory birds, and to design a targeted surveillance programme. A surveillance strategy was rapidly developed and implemented in October 2005, taking into account existing surveillance of unusual mortality events in wild birds, catching and ringing activities of the Wildfowl and Wetlands Trust and legal shooting of wildfowl carried out by members of British Association of Shooting and Conservation (BASC).

To accurately estimate the overall prevalence of avian influenza viruses in wild birds a prohibitively large number of birds would need to be tested. The survey was therefore targeted at migratory species thought to be of higher risk and sampling sites were chosen to provide good geographical coverage.



Catching swans with the Wildfowl and Wetlands Trust at Caerverlock, Scotland



Catching swans with the Wildfowl and Wetlands Trust at Slimbridge, Gloucestershire

Strategy for wild bird surveillance

There were three components to wild bird surveillance from October 2005:

Sampling of live caught birds

Cloacal faecal samples were collected from live caught birds, by staff at Wildfowl and Wetlands Trust sites in England, Scotland and Northern Ireland.

Samples were taken from Teal, Wigeon, Gadwall, Mallard, Pintail, Pochard, Tufted Duck, Bewick's Swan, Whooper Swan, Canada Goose, Greylag Goose and Shelduck.

Sampling from freshly shot birds

Cloacal faecal samples were taken from freshly shot birds by members of BASC throughout England, Wales, Scotland and Northern Ireland.

Examination of carcasses from unusually high mortality events (die offs) in wild birds

The programme has been running since 1998 and has been coordinated by VLA regional laboratories. The objective is to investigate and identify causes of die offs. This is also an important component of West Nile virus surveillance.

Reports of die offs from members of the public and bird enthusiasts are received by the Defra helpline or SVS. Where these dead birds meet the selection criteria, they are screened for the presence of avian influenza viruses.

Results

In 2005, a total of 3,493 samples from wild birds were tested for the presence of avian influenza viruses. No samples tested positive for the presence of the HPAI virus subtype H5N1.

The occurrence of LPAI viruses in wild birds is not an uncommon finding. It was expected that during the course of surveillance activities these viruses would be detected. The occurrence was lower than expected; only four birds tested positive for LPAI viruses. An avian influenza virus of subtype H6N2 was isolated from a Mallard duck shot in Scotland and a virus of subtype H1N1 was isolated from a Wigeon shot in England. Two birds tested positive for viral genetic material, but virus was not isolated from either sample. A Shelduck that was caught live in England tested positive for the subtype H2 and a Mallard caught live in England tested positive for the subtype H1.

Further details of these surveillance components and results are available at:

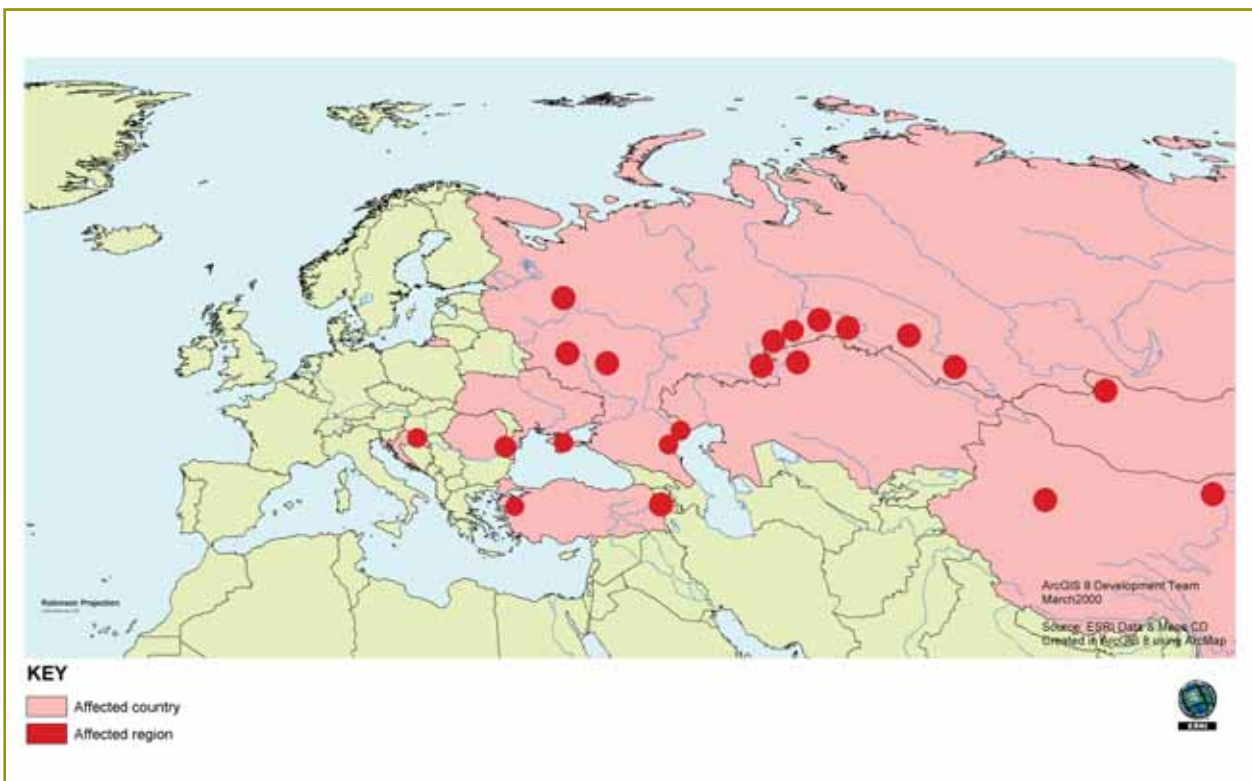
<http://www.defra.gov.uk/animalh/diseases/notifiable/disease/ai/wildbirds/survey.htm>

EU and UK legislation

The EU introduced a temporary ban on commercial imports of captive (wild) birds and restrictions on the import of pet birds into the EU from other countries on 25 October. Initially this was until 30 November 2005 and then was extended to 31 January 2006 on 16 November 2005, and subsequently to 31 May 2006. This Decision and another introducing a ban on bird gatherings, shows and fairs and other biosecurity measures were brought into force by the Avian Influenza (Preventive Measures) Regulations 2005 and Avian Influenza (Preventive Measures in Zoos) Regulations 2005 on 28 October. These Decisions were extended to 31 January 2006 for bird imports and 31 May 2006 for bird gatherings etc and brought into UK legislation by the Avian Influenza (Preventive Measures) (No 2) Regulations 2005 which combined the earlier sets of regulations. These regulations also provide the legal basis for the GB Poultry Register which was launched on 9 December. Under these regulations certain bird gatherings were permitted to proceed under specific licence from 17 November and under general licence from 20 December, but remain under review.

Following extensive negotiation the new Avian Influenza Directive (2005/94/EC) was adopted on 20 December under the UK Presidency and work on transposition and other strategic work on avian influenza has begun. The aim is to transpose the Directive into domestic legislation by 1 June 2006, 13 months ahead of the deadline, to coincide with the ending of the Decisions above.

Fig B1.1: Confirmed outbreaks of HPAI (H5N1) in Central Asia and Eastern Europe, May – December 2005



Advice to bird keepers

Advice was issued in late October 2005 for smaller concerns and back-yard keepers on how to improve biosecurity, encouraging bird keepers to feed and water their birds indoors or under cover to minimise contact with wild bird populations.

On 8 November 2005, British bird owners were advised that if a case of H5N1 were found in GB, wherever practicable, they should move their birds indoors as soon as possible whilst the disease is traced and controlled. In cases where housing is not practicable, the keeper would be required to take all reasonable measures to minimise contact with wild birds. In addition, a risk assessment would be conducted on the need to house birds should there be a case of H5N1 in other Member States or the East Atlantic flyway. Poultry keepers were advised to plan ahead so that rapid action could be taken and risk reduced. Guidance to poultry keepers on how to do this was devised with the aid of industry and published on 9 December.

Stakeholder engagement

There has been a high level of engagement with a wide range of external stakeholders and on a day-to-day basis. Stakeholders have also helped to cascade information and guidance material to their members. Monthly stocktake meetings have been held with key stakeholders to give them up-to-date information on the changing disease situation and to inform them of Defra's contingency plans in the event of an outbreak. Notes of the meetings are posted on the Defra website.⁵

GB Poultry Register

The Poultry Register opened on 9 December 2005. The information on the register will be used for risk assessment and to enhance contingency planning. The Register will also help communications to poultry keepers. Owners of 50 or more poultry on commercial premises are required to register their flocks by 28 February 2006. Those with fewer than 50 birds are being encouraged to register voluntarily.

The GB Poultry Register can be accessed at
<http://www.defra.gov.uk/animalh/diseases/vetsurveillance/poultry/index.htm>

Vaccination

The vaccines currently available do not make vaccination effective or efficient as a disease control or prevention measure for avian influenza in the great majority of likely circumstances. A working group has been established to investigate the practical role vaccination can play in disease prevention. A provisional marketing authorisation has been issued by VMD for the Intervet Nobilis vaccine, but although the vaccine can reduce mortality, it is likely that some vaccinated birds could still transmit the disease if they became infected. Defra is continuing to work with stakeholders on this issue.

⁵ <http://www.defra.gov.uk/animalh/diseases/notifiable/disease/ai/stakeholdermtgs/index.htm>

Worker protection

Joint industry and government guidance on safety for poultry workers was published on 31 October. It was produced by a government and Industry Working Group consisting of representatives from the Health and Safety Executive, Health Protection Agency, DH, Defra, the SVS, National Farmers Union, British Egg Industry Council, and the British Poultry Council. The group's advice on the use of personal protective equipment, use of antivirals and the administration of seasonal influenza vaccine to poultry workers was reviewed and endorsed by the Advisory Committee on Dangerous Pathogens on 28 October 2005.

Minutes of this meeting can be accessed at:

<http://www.hse.gov.uk/aboutus/meetings/acdp/281005/minutes.pdf>

Contingency planning

Should H5N1 be confirmed in UK poultry, Defra is prepared to tackle the disease. This contingency plan has already been used for the Newcastle Disease outbreak in July 2005. A revised version of the contingency plan (version 1.1)⁶ was laid before Parliament on 19 December, reflecting recent policy developments relating to the control of avian influenza. The key to effective disease control is early detection and rapid response. If there were a future outbreak of avian influenza in poultry in GB, the plan would be invoked immediately.

A tabletop exercise was held in the Cabinet Office Briefing Room (COBR) on 31 October to test strategic level response arrangements and communications strategy for an outbreak of avian influenza in UK poultry. Defra and the SVS played lead roles. A national scale exercise – Exercise Hawthorn – is being planned to test the contingency plan and is due to take place in April 2006.

More detailed discussion on Exercise Hawthorne can be found in **Chapter C1** of this report.

Global action

The UK played a key role in coordinating EU action on avian influenza during its Presidency of the EU, from July to December 2005. This included reaching an agreement on a new directive updating Community controls on avian influenza at the Agriculture Council in December 2005. Further detail on this is set out in **Chapter A3** of the report. In addition, advice and support were provided through the VLA which as the World Reference Laboratory, is a source of advice, expertise and training for specialists around the world. The VLA has also provided technical veterinary and humane slaughter equipment to countries affected to help their efforts to tackle the disease.

⁶ <http://www.defra.gov.uk/animalh/diseases/notifiable/disease/avianinfluenza-contplan.htm>

Fig B1.2: Avian influenza in China, Kazakhstan, Mongolia, Russia and recent outbreaks in SE Asia as at August 2005



Further information on avian influenza, our planned response to an outbreak, and advice to the public on handling birds is available at:
<http://www.defra.gov.uk/animalh/diseases/notifiable/disease/ai/index.htm>

B2: Bovine Tuberculosis

Bovine Tuberculosis (bTB) continues to be one of the most challenging animal health problems that we face. The government is committed to tackling the disease, working in partnership with stakeholders to reduce the economic impact of bTB and maintain public health protection and animal health and welfare.

Bovine Tuberculosis

Tuberculosis (TB) is an infectious disease of humans and animals caused by several species of the *Mycobacteriaceae* family of bacteria. *Mycobacterium bovis* (*M. bovis*) is the bacterium that causes TB in cattle. In addition to cattle, a wide range of mammals are susceptible and a number of wild animals can also act as reservoirs of *M. bovis* in different regions of the world, posing major impediments to eradicating the disease in cattle. At present, less than 1% of all confirmed cases of TB in humans are due to infection with *M. bovis*. This is similar to the situation reported in the vast majority of developed countries.

Historical overview of TB

With the introduction of compulsory testing and slaughter in 1950, any animals that test positive are slaughtered. Although the incidence of bTB has increased over the last 15 years, the testing and slaughter programme remains central to the strategy to stop its spread.

Regular TB testing of cattle is intended to reduce the risk of cattle-to-cattle transmission of *M. bovis*. This measure also ensures the early removal of infected cattle before they have developed clinical signs of disease or, in the case of dairy cows, started to shed *M. bovis* in the milk.

Since 1993, less than 50 (35 in England and Wales) cases of bacteriologically confirmed human *M. bovis* infection have been diagnosed annually in GB. A total of 21 cases were reported in 2003 (15 in England and Wales) and 21 in 2004 (15 in England and Wales). Provisional data on the number of cases diagnosed in 2005 is expected to be similar to the two preceding years. The threat to public health is considered to be low and *M. bovis* infections in humans are treatable.

TB strategic framework for Great Britain

The *Government strategic framework for the sustainable control of bovine tuberculosis in Great Britain* was published in March 2005.⁷ The framework builds upon the 1998 five-point plan of action and has been guided by the principles of the Animal Health and Welfare Strategy. It sets out a vision for the future, with 12 strategic goals, and new commitments and principles that will be applied to achieve these. Specific disease control policies will be tailored to reflect the regional variation in disease and risk, and adjusted to make best use of emerging scientific findings.

⁷ <http://www.defra.gov.uk/animalh/tb/strategy/newstrategy.htm>

Overall Vision:

“To develop a new partnership based on the Animal Health and Welfare Strategy so that government and stakeholders can work together to reduce the economic impact of bTB and maintain public health protection and animal health and welfare. We aim to slow down and prevent the geographic spread of bTB to areas currently free of the disease, and achieve a sustained reduction in disease incidence in cattle in high incidence areas.”

The strategic framework also sets out the process for decision making on a badger culling policy. In deciding whether to introduce a badger culling policy, the government will take into account scientific evidence, animal welfare, cost effectiveness, practicability, conservation and wider public opinion.

The strategic framework includes a commitment to introduce a statutory requirement to test cattle for bTB prior to movement. Translocation of TB by movements of infected cattle is a cause of disease spread. This is substantiated by scientific evidence. Ascertaining the disease status of an animal prior to movement using the tuberculin skin test and only permitting movement of those with negative test results will reduce the number of cattle with bTB that are moved within the country and in turn the risk of disease spread.

The CVO asked an independently chaired stakeholder group to recommend an effective and practical mechanism for reducing the risk of spreading bTB through cattle movements, on the basis that costs will be shared with farmers. The group's report to the CVO was published on 1 June 2005.⁸ The group sought to mitigate the impacts on industry whilst ensuring the effectiveness of the measure in terms of disease control. A key recommendation of the group was that if pre-movement testing was to be introduced in the short term, it should be limited to cattle in 1–2 year testing herds that are over 15 months of age. The group recommended a delay before extending the policy to cattle between six weeks and 15 months to allow time for herd owners and Local Veterinary Inspector (LVI) practices to adjust to the new requirements. The policy adopted was largely based on the Group's recommendations except where there were significant policy, legal or delivery constraints.

New measures to tackle bTB in England

On 15 December 2005 new measures to tackle bTB in England and help achieve the vision set out in the TB strategic framework were announced. These included:

- statutory requirement for cattle moving from high risk herds in England to be pre-movement tested. From 27 March 2006 pre-movement testing will apply to cattle over 15 months old.⁹ This will eventually be extended to all cattle over 42 days of age in 2007;

⁸ <http://www.defra.gov.uk/animalh/tb/pdf/pre-movementtest.pdf>

⁹ This date was moved back from 20 February 2006 to allow industry more time to prepare

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- change to the compensation payment arrangements so that in future they are fairer for both farmers and the taxpayer; and
- consultation on the principle and method of culling of badgers for control of bTB in cattle.

The creation of a new bTB stakeholder advisory body was also announced and prospective members were invited to apply. Further funding for the development of vaccines for cattle and badgers and the extended use of the gamma interferon (γ -IFN) skin test was also announced.

Overview of Work on bTB in 2005

- Defra spent approximately £91 million on the bTB programme in the financial year 2004/05.
- Zero tolerance (herd placed under immediate restriction) for overdue bTB tests came into force in February.
- LVIs and SVS veterinarians completed nearly 5 million tuberculin tests on cattle. The VLA performed nearly 14,000 gamma-interferon tests on cattle blood samples.
- The Independent Scientific Group on Cattle TB (ISG) Fourth Report and Defra's response published in February.
- The report of the Irish Four Area Culling Trial published together with comments from the ISG, the Godfray Group and Defra's Chief Scientific Adviser (CSA) in March.
- Publication of the *Government Strategic Framework for the sustainable control of bovine tuberculosis (bTB) in Great Britain* in March.
- Wide-ranging programme of research has continued, including the Randomised Badger Culling Trial (RBCT). Several papers were published in 2005.
- New measures to tackle the spread of bTB in England, including introduction of pre-movement testing in England, new compensation procedures and a public consultation on badger culling, announced in December 2005.

Overview of bTB statistics and controls in cattle for 2005

The TB statistics presented in this chapter reflect the position in GB at the end of 2005.¹⁰ Except where indicated otherwise, these are cumulative statistics for the period 1 January to 31 December 2005. Although 2005 figures should be regarded as provisional, any future adjustments are likely to have very small effect. Other TB statistics published by Defra can be accessed at: <http://www.defra.gov.uk/animalh/tb/stats/index.htm>

Headline TB statistics for GB in 2005

- 3.4% apparent prevalence at the end of the year (herds under restrictions due to a TB breakdown, excluding herds with overdue test restrictions).
- 4.3% incidence of confirmed new herd breakdowns throughout the year (7.8% if all breakdowns were included).
- 93.6% of cattle herds considered officially TB free at year end.
- 4.8 million cattle tuberculin tested in more than 43,000 herd tests.
- 3,653 new TB incidents in 2005 (up 9.1% on 2004). Infection confirmed in 2,023 of those (up 14.7% on the previous year). These annual increases were below the average for the period 1986–2005 (13.0% and 16.7% respectively).
- 25,755 tuberculin test reactors slaughtered (0.53% reactors per 100 animals tested).
- Marked geographical variations in herd and animal incidence.

Provisional statistics for 2005 – herds

Table B2.1 shows that 2.8% fewer tuberculin herd tests were carried out in GB in 2005 than in 2004 (43,558 against 44,794). However, 4.3% more animals received a tuberculin test in 2005 than in the previous year (4.8 against 4.6 million). The number of tuberculin herd tests completed each month continued to show a marked seasonal pattern similar to that of previous years, with 65% of all tests completed in the period from 1 November 2004 through 30 April 2005.

¹⁰ Figures have, in the main, been derived from data recorded on the SVS IT support system (VetNet) on 7 March 2006

Table B2.1: TB surveillance statistics for GB, for the period 1 January to 31 December 2005. ¹¹ Total figures for 2004 shown for comparison.

County/SVS region/country	Cornwall	Devon	Somerset	Dorset	Gloucestershire	Avon	Wiltshire	Hereford & Worcestershire
1. Total number of cattle herds registered on Vetnet	3,528	5,641	2,958	1,565	1,464	1,028	1,456	2,903
2. Total number of herds under TB restrictions due to a TB incident some time during the year	670	1,225	228	127	408	134	189	597
3. Herds under TB restrictions at the end of the year (due to a TB incident, overdue TB test, etc)	547	1,016	169	120	222	92	100	483
4. Percentage of herds under TB restrictions at the end of the year	15.5	18.0	5.7	7.7	15.2	8.9	6.9	16.6
Tuberculin tests carried out								
5. Total number of herd tests	3,934	6,503	1,672	872	1,982	1,011	1,294	2,846
6. Total number of cattle tests	518,170	882,586	196,135	116,131	229,157	109,773	174,162	305,195
New TB incidents (breakdowns) started in 2005								
7. Total new herd TB incidents	429	769	136	90	269	90	131	359
8. Number of confirmed TB incidents	241	435	64	41	182	43	68	241
9. Number of unconfirmed TB Incidents	157	312	66	47	82	44	58	103
10. Number of unclassified TB Incidents (pending culture results)	31	22	6	2	5	3	5	15
11. Percentage of all new TB incidents that were confirmed	56.2	56.6	47.1	45.6	67.7	47.8	51.9	67.1
12. Total number of confirmed new incidents in 2004	213	400	72	22	135	46	70	207
Cattle slaughtered under the TB orders								
13. As Reactors, including unresolved (three-times) Inconclusive Reactors	3,339	6,195	856	434	2,167	562	1,016	2,977
14. As Inconclusive Reactors	85	40	14	14	49	12	16	72
15. As Direct Contacts	66	421	95	2	209	17	68	644
16. Total number of cattle slaughtered for TB control reasons	3,490	6,656	965	450	2,425	591	1,100	3,693
Other animals								
17. Slaughterhouse cases reported to the SVS by the MHS (number confirmed)	61 (44)	10 (1)	134 (89)	6 (2)	28 (16)	40 (21)	7 (5)	17 (12)

¹¹ Provisional data downloaded from the SVS Animal Health Database (VetNet) on 7 March 2006.

Table B2.1: TB surveillance statistics for GB, for the period 1 January to 31 December 2005. ¹¹ Total figures for 2004 shown for comparison.

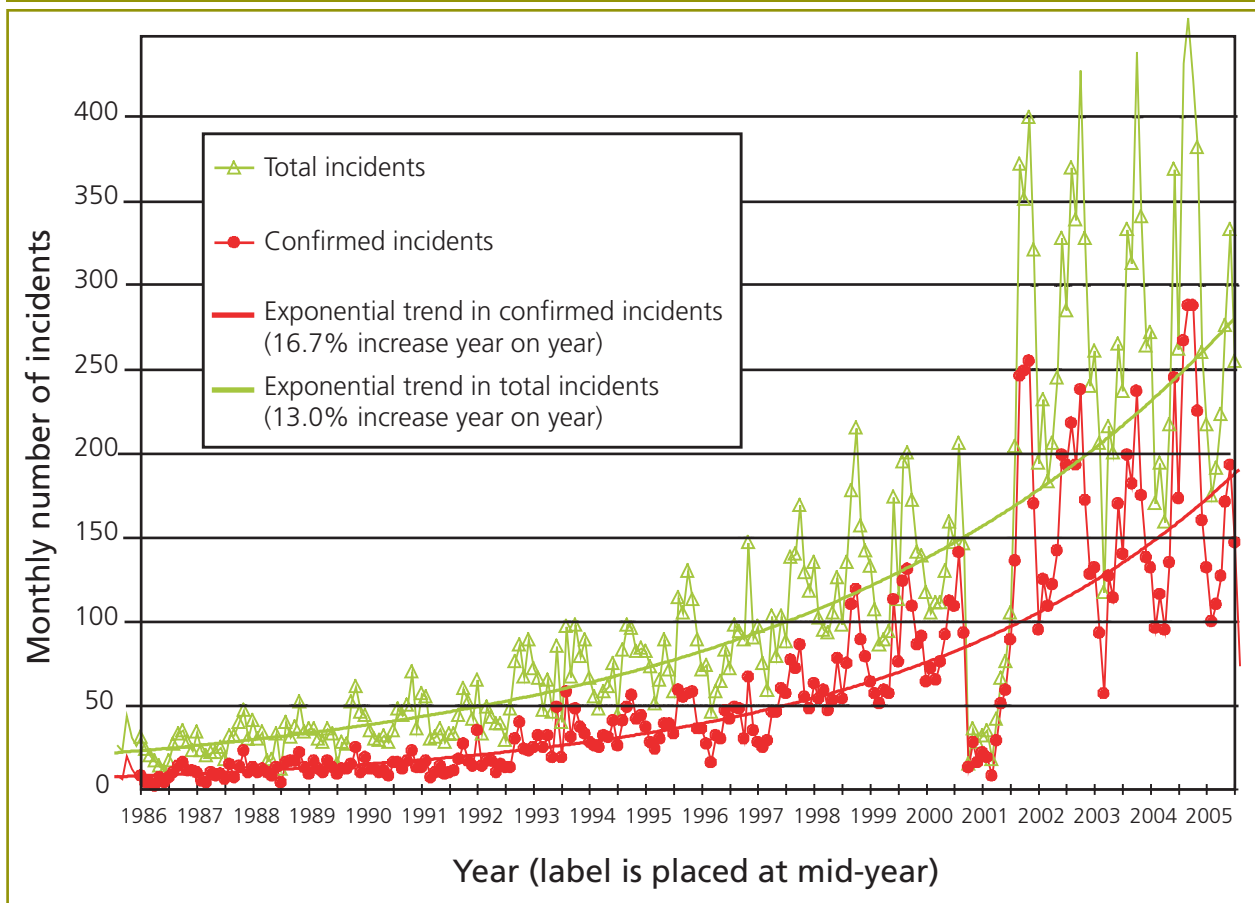
County/SVS region/country	Shropshire	West Region	North Region	East Region	Total England	Total Wales	Total Scotland	Total Great Britain (2005)	Total Great Britain (2004)
1. Total number of cattle herds registered on Vetnet	2,821	23,364	25,080	12,775	61,219	14,856	14,588	90,663	93,489
2. Total number of herds under TB restrictions due to a TB incident some time during the year	180	3,758	533	133	4,424	1,180	70	5,674	5,239
3. Herds under TB restrictions at the end of the year (due to a TB incident, overdue TB test, etc)	154	2,903	756	305	3,964	1,654	164	5,782	3,745
4. Percentage of herds under TB restrictions at the end of the year	5.5	12.4	3.0	2.4	6.5	11.1	1.1	6.4	4.0
Tuberculin tests carried out									
5. Total number of herd tests	1,589	21,703	8,033	2,116	31,852	8,611	3,095	43,558	44,794
6. Total number of cattle tests	197,092	2,728,401	802,535	153,832	3,684,768	925,060	230,687	4,840,515	4,638,761
New TB incidents (breakdowns) started in 2005									
7. Total new herd TB incidents	124	2,397	396	94	2,887	729	37	3,653	3,349
8. Number of confirmed TB incidents	85	1,400	203	30	1,633	377	13	2,023	1,770
9. Number of unconfirmed TB Incidents	37	906	177	63	1,146	328	24	1,498	1,576
10. Number of unclassified TB Incidents (pending culture results)	2	91	16	1	108	24	0	132	3
11. Percentage of all new TB incidents that were confirmed	68.5	58.4	51.3	31.9	56.6	51.7	35.1	55.4	52.7
12. Total number of confirmed new incidents in 2004	63	1,228	165	30	1,423	324	23	n/a	1,770
Cattle slaughtered under the TB orders									
13. As Reactors, including unresolved (three-times) Inconclusive Reactors	695	18,241	1,661	226	20,128	5,515	112	25,755	19,975
14. As Inconclusive Reactors	18	320	68	25	413	135	17	565	494
15. As Direct Contacts	143	1,665	842	64	2,571	1,120	52	3,743	2,595
16. Total number of cattle slaughtered for TB control reasons	856	20,226	2,571	315	23,112	6,770	181	30,063	23,064
Other animals									
17. Slaughterhouse cases reported to the SVS by the MHS (number confirmed)	94 (67)	397 (257)	98 (46)	29 (14)	524 (317)	37 (10)	26 (10)	587 (357)	387 (201)

¹¹ Provisional data downloaded from the SVS Animal Health Database (VetNet) on 7 March 2006.

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A total of 5,674 cattle herds were under restrictions due to a TB incident at some time during 2005, compared with 5,239 herds in 2004. This figure includes new herd incidents (see below) plus any incidents disclosed in previous years and still unresolved in 2005. At the end of 2005 a total of 5,782 cattle herds were under TB restrictions. This figure included herds subject to restrictions for reasons other than a TB incident (e.g. an overdue tuberculin test). At the end of 2005, 93.6% of the cattle herds in the country were considered officially TB free (OTF).

Figure B2.1: Monthly numbers of total and confirmed new TB incidents in GB between January 1986 and December 2005.¹²



The total number of new TB incidents (herd breakdowns) in GB increased from 3,349 in 2004 to 3,653 in 2005 (up 9.1%). Infection was confirmed by post mortem examination and/or mycobacterial culture in 2,023 incidents, compared with 1,765 incidents in 2004 (up 14.7%). The increases in total and confirmed TB incidents in 2005 continued the upward trend observed since the mid 1980s (**Figure B2.1**), but represented a reduction from the average annual increases in the period 1986-2005 (13.0% and 16.7% respectively).

The proportion of all confirmed new TB incidents increased from 52.7% in 2004 to 55.4% in 2005 based on unadjusted VetNet data. The proportion actually increased from 58% to 61% if all the incidents triggered by confirmed slaughterhouse cases, regardless of whether reactors were found or not, are taken into account (**Figure B2.2**). The overall trend since 1986 shows a steady rise in the percentage of confirmed herd incidents.

¹² Disruption of the TB testing programme during the Foot and Mouth Disease (FMD) outbreak of 2001 led to a marked fall in TB breakdowns detected by tuberculin testing.

Figure B2.2: Proportion of TB incidents that were confirmed in GB per month, from January 1986 to December 2005.¹³

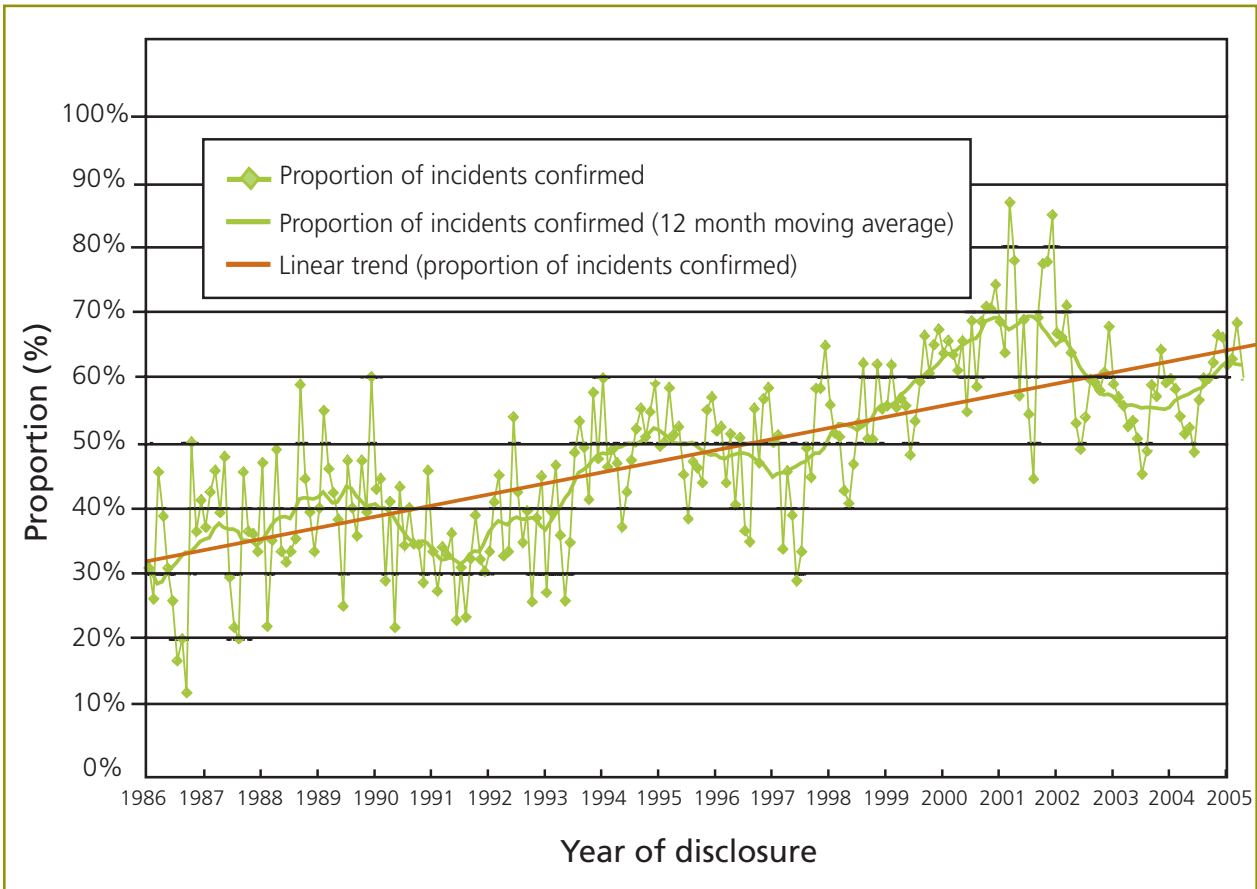


Figure B2.3 shows the monthly percentage of tests in unrestricted herds that have resulted in confirmed TB incidents since 1996. In this chart the number of breakdowns is divided by the number of tests carried out each month, to account for seasonal variations in the frequency of testing. In 2005, for every 100 tests in unrestricted cattle herds, an average of 4.4 new confirmed incidents were detected. The equivalent rates for 2004 and 2003 were, respectively, 3.6 and 3.5 new confirmed incidents for every 100 tests.

Since 1993, the overall trend in the proportion of incidents disclosed in herds within yearly testing parishes has steadily increased at the expense of those in two, three and four-yearly testing parishes (Figure B2.4).

¹³ Historical VetNet data series revised upwards to include incidents triggered by confirmed slaughterhouse cases in which no test reactors were found. Although there was a steady upward trend between 1997 and 2000, the increased proportion in much of 2001 may have resulted from the targeting of incidents in areas with a high prevalence of TB during the FMD epidemic.

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Figure B2.3: Monthly incidence of confirmed TB breakdowns and trend for the period January 1996 to November 2005, expressed as the percentage of tests on unrestricted herds that resulted in confirmed new incidents.

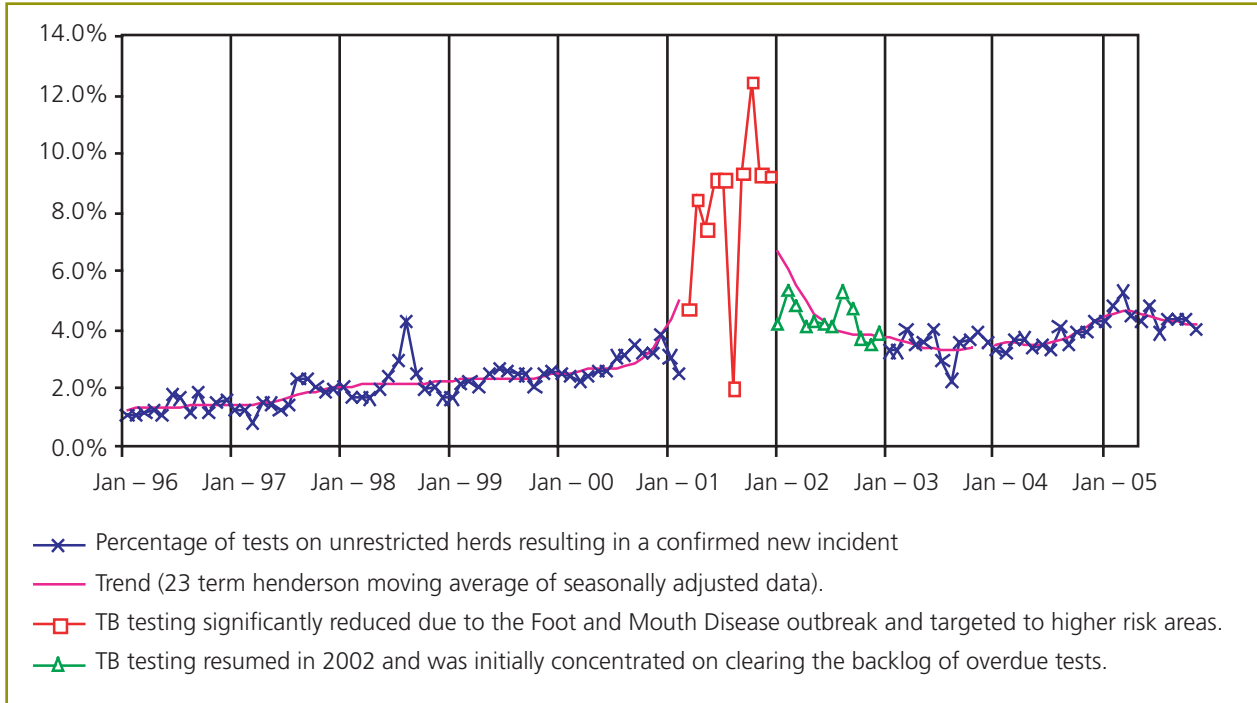


Figure B2.4: Proportion of all confirmed new TB incidents disclosed between 1993 and 2005 in herds within each parish testing interval.

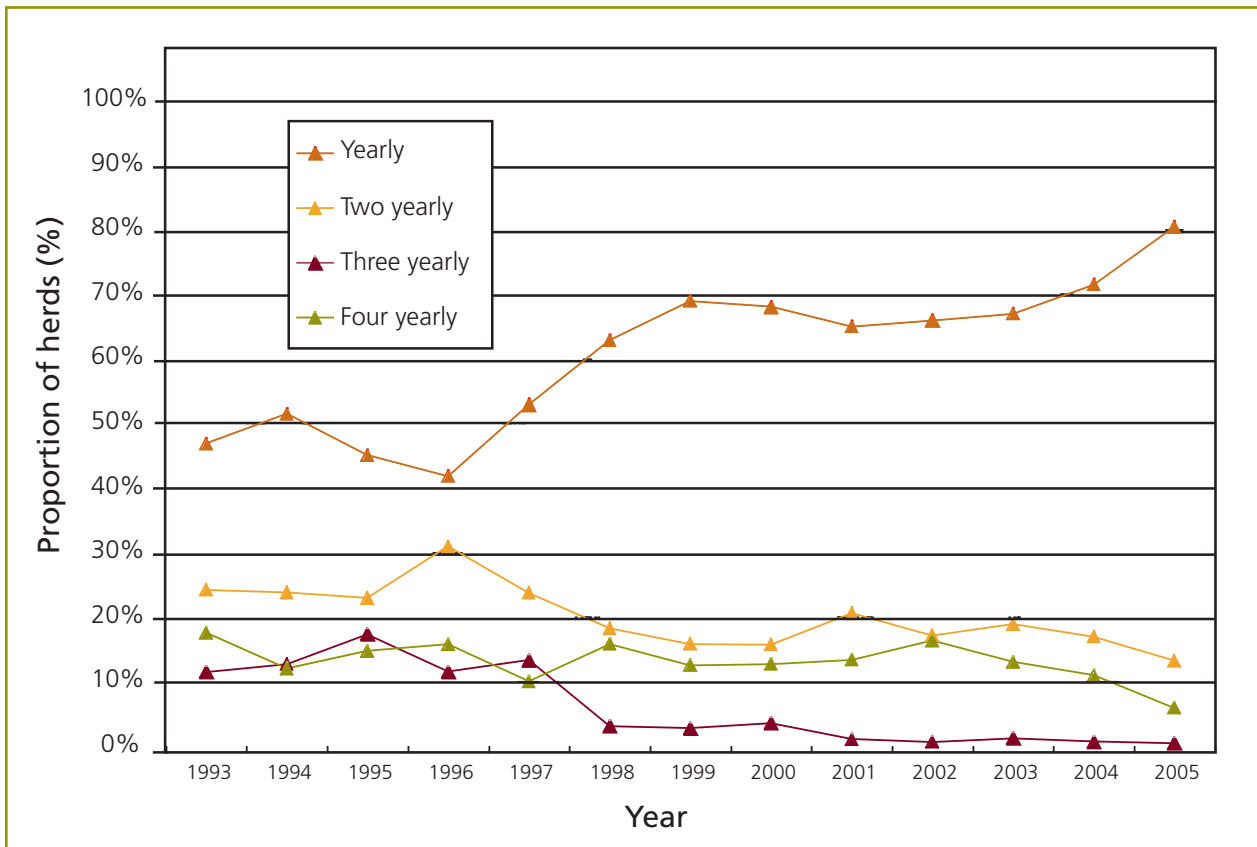
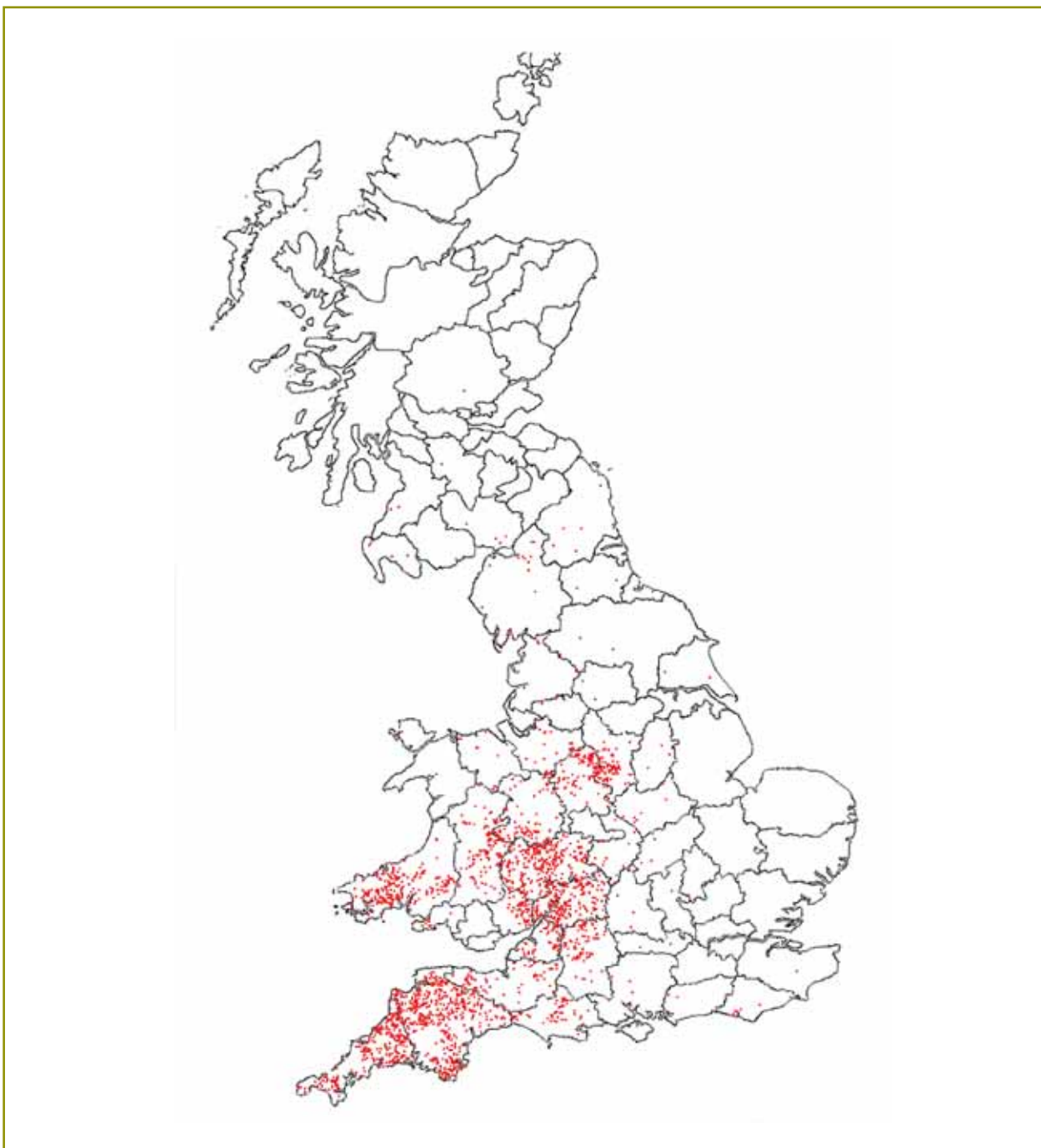


Figure B2.5: Geographical distribution of cattle herds with confirmed new TB incidents (red dots) in 2005.



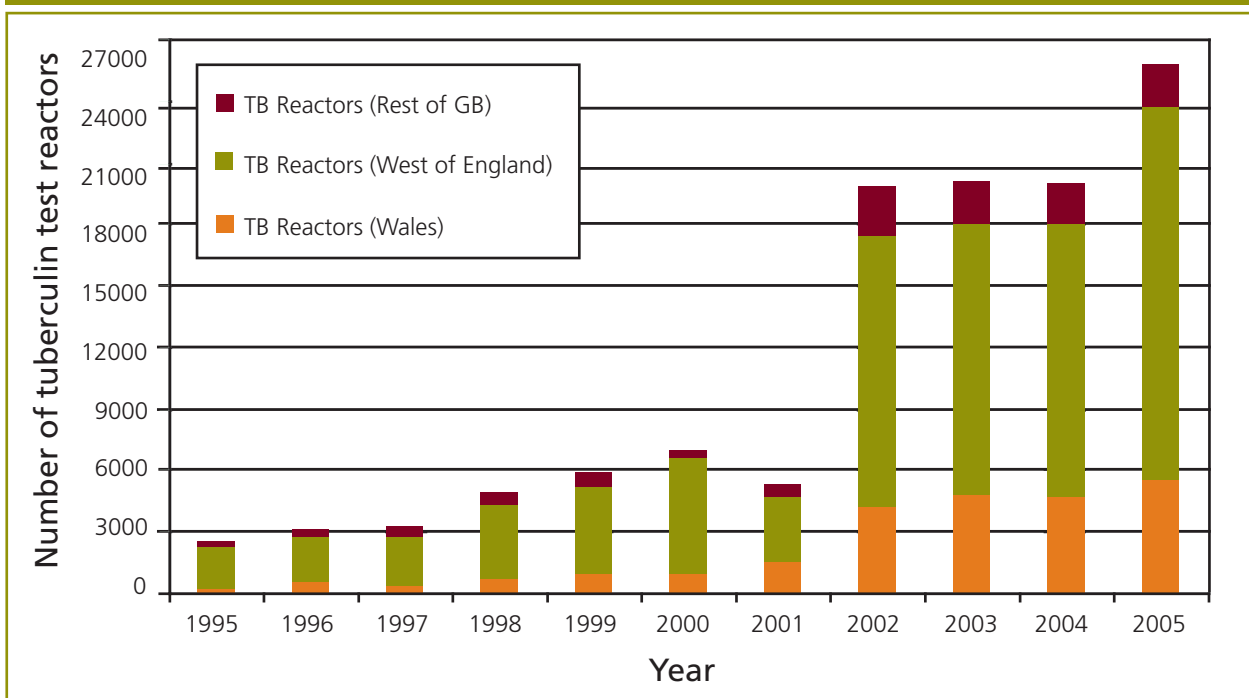
Provisional year-end statistics for 2005 – animals

As depicted in **Figure B2.5**, the English counties of Cornwall, Devon, Dorset, Somerset, Gloucestershire, Wiltshire, Avon, Herefordshire, Worcestershire, Shropshire, Stafford and Derbyshire, along with the Welsh old counties of Dyfed, West Glamorgan, Powys and Gwent accounted for the vast majority (95%) of confirmed new incidents. The incidence of confirmed herd breakdowns was highest in Gloucestershire, followed by Hereford and Worcestershire, Devon, Cornwall and Gwent (in order of decreasing incidence).

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Compared with 2004, Somerset, West Glamorgan, Scotland and Cumbria all experienced reductions in TB incidence. In Cumbria, the number of new incidents fell from 65 in 2004 (17 of which confirmed) to 41 (12 of which confirmed) in 2005. There were 37 new TB incidents in Scotland in 2005, of which 13 (35%) were confirmed. Of those, three were attributed to the purchase of infected cattle from England and three were associated with imported Irish cattle. Nine of the 13 confirmed incidents were in herds in the Southwest of Scotland. These figures are a marked improvement on the 81 incidents (23 confirmed) identified the previous year in Scotland.

Figure B2.6: Number of skin test reactors slaughtered in GB since 1995, broken down by the animals' region of origin.¹⁴

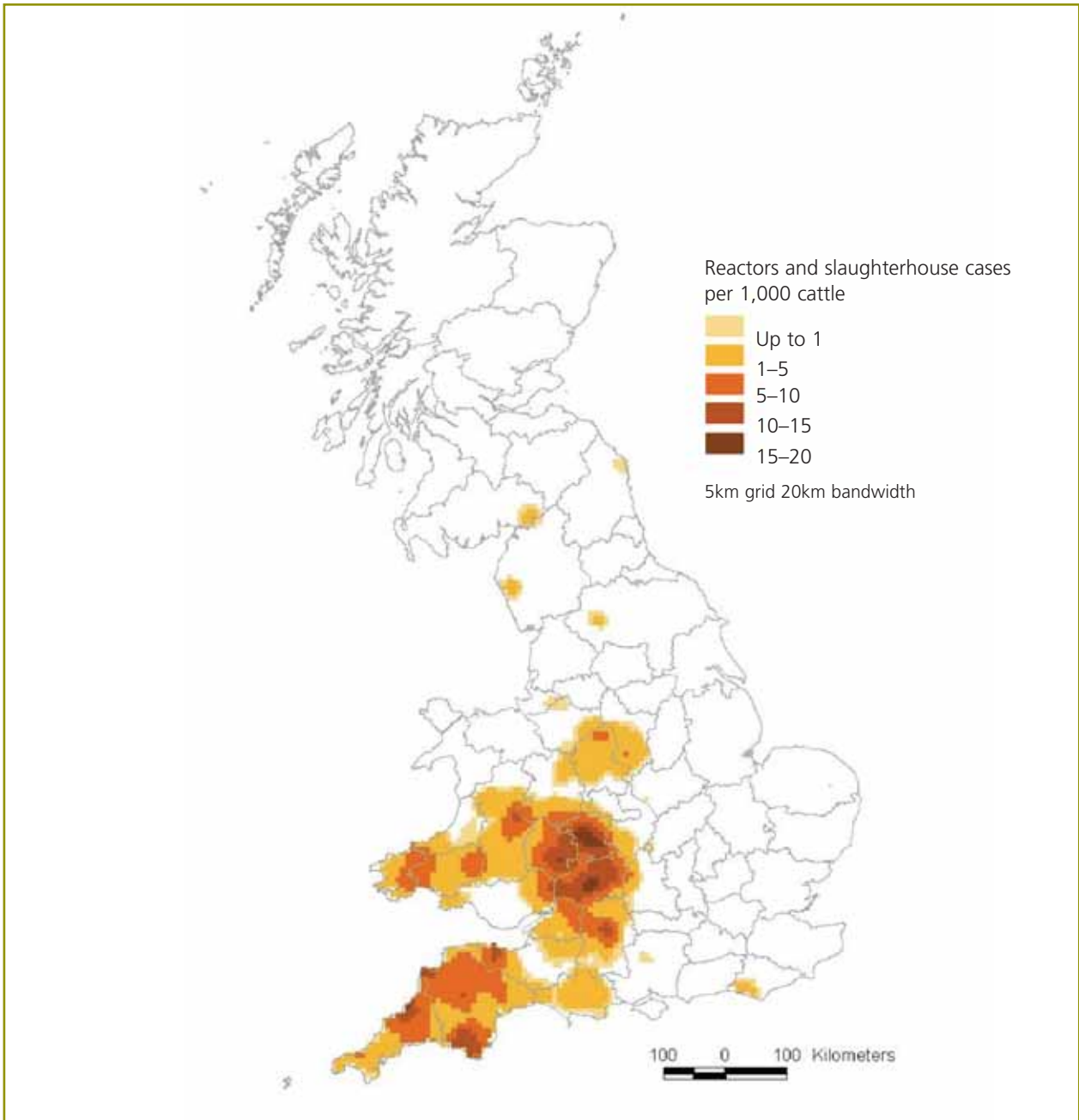


A provisional total of 25,755 cattle were slaughtered as tuberculin test reactors in 2005, up 29% on the total for 2004 (19,975 reactors) (**Table B2.1** and **Figure B2.6**). This represented 0.53% of the 4.8 million animal tests carried out during the period (i.e. 53 reactors per 10,000 animal tests performed or one reactor per 190 animals tested). This is the highest reactor rate registered in GB since accurate records started to be compiled in 1959. Disease was confirmed by post mortem and/or bacteriological examinations in 37% of all reactors, a proportion significantly greater than that in 2004 (34%). The average total number of reactors per TB incident disclosed or continuing in 2005 was 4.6, compared with 3.8 in 2004.

¹⁴ West of England comprises the counties of: Cornwall, Devon, Somerset, Dorset, Avon, Gloucestershire, Wiltshire, Herefordshire, Worcestershire and Shropshire

Figure B2.7 illustrates the marked geographical variations in the density of tuberculin test reactors and slaughterhouse cases disclosed across GB in 2005.

Figure B2.7: Density map of tuberculin test reactors and slaughterhouse cases disclosed in 2005



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Table B2.2: Culture results for bovine carcasses presenting with suspicious TB lesions at routine meat inspection and notified by the MHS (slaughterhouse cases).¹⁵

Culture result	2004		2005 (provisional)	
	No. of cases	%	No. of cases	%
<i>Mycobacterium bovis</i>	387	58.20	499	64.47
Negative	232	34.89	189	24.42
<i>Actinobacillus spp.</i>	39	5.86	76	9.82
<i>M. avium</i>	4	0.60	4	0.52
<i>M. smegmatis</i>	0	0	1	0.13
Contaminated	1	0.15	3	0.39
Unclassified	2	0.30	2	0.26
Total slaughterhouse case submissions processed by VLA	665	100	774	100
New TB incidents on cattle farms triggered by <i>M. bovis</i> -positive submissions	201	NA	357	NA

The number of cattle slaughtered as inconclusive reactors and direct contacts also increased from those recorded in 2004, bringing the total number of cattle slaughtered for TB control purposes in 2005 to just over 30,000 (**Table B2.1**).

Suspicious TB lesions were reported by the Meat Hygiene Service (MHS) in nearly 800 cattle carcasses inspected at routine slaughter. The SVS back-traced the herds of origin of those animals submitted and tissue specimens to VLA for laboratory examination, with the results shown in **Table B2.2**.

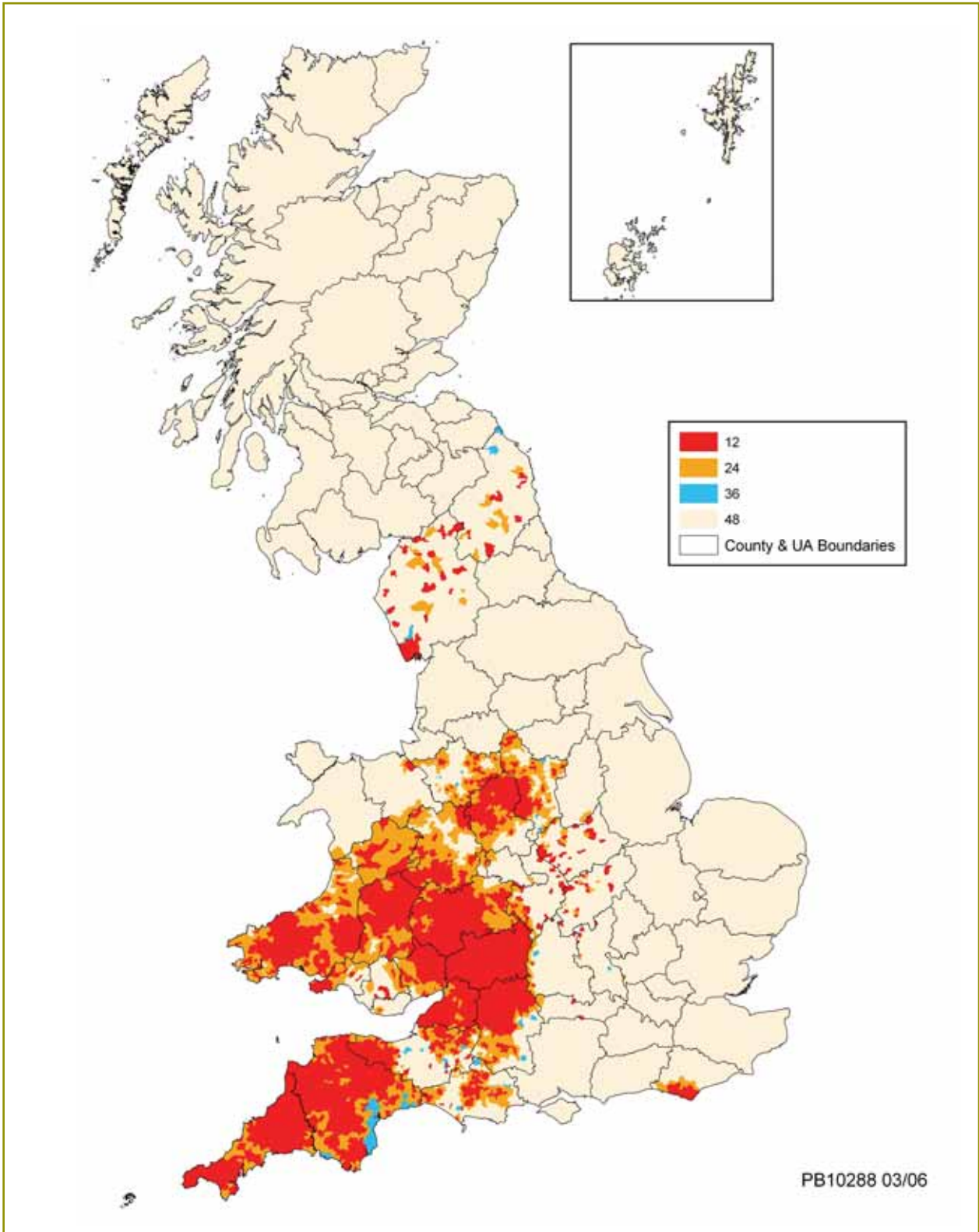
Overdue tuberculin tests

On 16 February 2005, the SVS began to apply movement restrictions (and thus effectively suspend the OTF status) on cattle herds immediately after a tuberculin test became overdue. This zero tolerance approach to overdue tests was one in a raft of short-term measures launched from 1 November 2004 to tighten TB controls in cattle. It is now the herd owners' responsibility to arrange for their tests to be completed on time. All herd owners receive a Test Notification Letter from the SVS, detailing the earliest and last dates on which their tuberculin test can be completed. This testing window is two months before the test due date for herds subject to annual testing and three months for other herds. The testing window concept also applies to ad hoc (non-routine) tests. Cattle from premises placed under overdue test restrictions can only be moved directly to slaughter under licence issued by the SVS. At the end of 2005, there were 2,595 overdue tuberculin herd tests across GB, compared to the 2,739 tests on 31 December 2004. A total of 468 (18%) of those tests had been overdue for at least six months.

¹⁵ Results are for individual submissions processed by the VLA TB Diagnostic Laboratory in Weybridge in 2005 (2004 data shown for comparison). Four submissions had not been fully processed (pending culture results) at the time of writing this report.

Changes in parish testing intervals

Figure B2.8: New parish testing intervals (PTI) effective in GB from 15 December 2005¹⁶



¹⁶ All animal health parishes in Scotland remained on 4-yearly testing (source: SVS).

Section B – Chapter B2

In October 2005, the SVS conducted its annual review of parish testing intervals (PTIs). New intervals came into force from 15 December 2005. As in previous years, the objective was to ensure that herd testing frequencies across GB were compliant with the minimum requirements of Directive 64/432/EEC. Annex A of this European Directive dictates that tuberculin testing intervals should be calculated using the annual incidence of confirmed TB breakdowns (regardless of their presumed origin) in a defined area over a period of up to six years. The area to be considered when reviewing testing intervals is not specified in the Directive. In the SVS exercise, testing areas were defined in different ways, taking into consideration the diverse disease situations in each region of GB:

- In Scotland, the whole country was regarded as one area;
- In England and Wales, the annual incidence of confirmed breakdowns was first calculated for each county and then, if it exceeded 0.1%, it was recalculated for each individual parish within that county.

Divisional Veterinary Managers (DVMs) retain the discretion to shorten the interval between routine herd tests beyond the Directive requirements, on an area (parish) or individual herd basis. DVMs may shorten PTIs at any time between two annual reviews in response to an increased TB risk in their divisions. The map in **Figure B2.8** represents the routine PTIs in operation from December 2005.

Bovine TB testing

In November 2004, following consultation, the rollout of a number of cattle-based measures to tighten surveillance and reduce the risk of TB spreading to new areas was announced.

Further to these measures, the strategic framework sets out the government's aim to slow down and prevent the geographic spread of bTB to areas currently free of the disease, and achieve a sustained reduction in disease incidence in cattle in high incidence areas. One of the commitments in the strategic framework was to ensure cattle surveillance and controls are effective, delivered efficiently and provide good value for money.

As mentioned earlier, in December 2005 Defra announced the introduction of statutory pre-movement testing of cattle in England, to help reduce the risk of spreading TB between herds in high risk areas and to herds in areas free from the disease.

SEERAD introduced compulsory pre-and post-movement testing requirements for Scotland on 23 September 2005. The Welsh Assembly Government will introduce the same pre-movement testing policy on 2 May 2006.



All cattle herd owners were sent a guidance booklet to tell them how to meet these new statutory TB testing requirements.

Deployment of the gamma interferon (γ -IFN) blood test

Screening of cattle herds for bTB by one of the variants of the tuberculin skin test is the internationally accepted standard, and currently the best method available, for the diagnosis of *M. bovis* infection in live cattle. Bovine TB has been eradicated in many countries through the systematic application of the skin test alone and the slaughter of all test reactors. However, no screening test for animal diseases is perfect and the skin tests are no exception. To maximise the effectiveness of screening, ancillary in vitro immunological tests such as the gamma-interferon (γ -IFN, Bovigam®) blood assay are now strategically used to complement the primary (skin) tests with two main objectives:

- to boost the overall sensitivity of testing in regions or herds with a high incidence of TB, removing any skin-test negative cattle that show a positive result to the γ -IFN test (parallel testing or any positive interpretation); and
- to increase the overall specificity of testing in the last stages of a TB eradication campaign, in areas of very low TB incidence, or in regions with a high incidence of non-specific sensitisation to bovine tuberculin (serial testing or both positive interpretation).

The European Commission approved the γ -IFN test as an ancillary (parallel) diagnostic test for TB in cattle in the EU in 2002. Since then, the γ -IFN test has been used in GB more frequently every year.

Gamma-interferon test field trial

The randomised field trial of the γ -IFN test that began in November 2002 continued for most of 2005 in Wales, Gloucester, Avon, Wiltshire, Herefordshire, Worcestershire, Shropshire, Staffordshire, Derbyshire and Cheshire. This trial was designed to assess whether the application of one γ -IFN herd test after the disclosing skin test could significantly (and cost-efficiently) reduce the duration of confirmed TB herd incidents. The trial aimed to recruit a minimum of 600 herds with a new TB incident involving at least three skin test reactors, one of which had to have visible lesions typical of TB at slaughter. As of 2 October 2005, a total of 195 eligible herds comprising 33,185 cattle had been recruited by the six participating SVS divisions. This meant that the project was unlikely to be completed before 2012 at the current rate of herd recruitment. Given the scale of the bTB problem, it was considered that this was too long to wait. As a result, Defra and the Welsh Assembly Government decided to terminate the trial in October and concentrate on the increased use of the γ -IFN test. Nevertheless, some useful lessons have been learnt from this trial and these will be applied as new policies are developed. The intention is to deploy the γ -IFN test in a wider range of clearly defined situations during 2006, while closely monitoring the effects of the rollout.

Other gamma-interferon testing

Table B2.3: Number of gamma-interferon (γ -IFN, BOVIGAM[®]) blood tests performed by the VLA on cattle in GB, between November 2002 and December 2005 (source: VLA).

Reason for test	Year				Total by test type
	2002 (Nov-Dec)	2003	2004	2005	
Field trial	509	2,758	2,149	4,950	10,366
Ad hoc use	302	832	4,161	8,927	14,222
Total by year	811	3,590	6,310	13,877	24,588

Between November 2002 and the end of 2005, approximately 10,400 γ -IFN tests in 77 herds were performed by the VLA as part of the national field trial. In the same period, an additional 14,200 cattle in 85 herds were γ -IFN tested ad hoc outside the trial. In the majority of these herds, the γ -IFN test was deployed as a parallel test to help resolve persistent or severe TB breakdowns with confirmed infection, or as an alternative to the slaughter of an entire infected herd or group of animals. The γ -IFN test was also used as a serial test to help clarify the status of individual animals prior to their removal as reactors to the skin test. The latter application of the γ -IFN test has been limited to a very small number of herds:

- those with persistently unconfirmed TB breakdowns in areas of low TB incidence and with evidence of non-specific sensitisation to tuberculin, or
- herds with suspected fraudulent skin test reactors.

Lay TB testing pilot

On 15 August, the Veterinary Surgery (Testing for Tuberculosis in Bovines) Order 2005 came into force enabling the SVS to carry out pilot programmes designed to evaluate the possibility of allowing any suitably trained lay person to administer a TB skin test. More information can be found in **Chapter A2**, in the Veterinary Surgeons Act 1966 section of this report.

TB compensation

Compensation is determined using individual on-farm valuation, with full market value paid for cattle slaughtered under bTB control measures up until 1 February in 2006. Over £35 million compensation was paid in GB in 2004/05.

The long-term objective is to rationalise compensation systems for all notifiable animal diseases. Stakeholders were consulted on proposals for stage one of this process (rationalising compensation for four cattle diseases, including bTB) at the end of 2004. As a result, a new compensation system, based on table valuations, will be introduced in England on 1 February 2006 for cattle compulsorily slaughtered for bTB, Brucellosis and Enzootic Leukosis and for BSE on 1 March 2006. Wales plan to introduce similar arrangements in summer 2006. The Scottish Executive has no plans to move from the individual on-farm valuation system for the foreseeable future.

Randomised Badger Culling Trial and Related Projects

Fieldwork

The background and design of the Randomised Badger Culling Trial (RBCT) have been detailed in previous annual reports, including the 2004 Report.

The proactive culling in 2005 represented the last year of culling under the RBCT as the milestone of the collection of 50 triplet years' worth of culling data is due to be reached in early 2006. The Independent Scientific Group on Cattle TB (ISG) has always had a commitment to present to Ministers any significant interim findings emerging from the Trial.

In October 2005, Ministers asked the ISG to provide the most up-to-date results to help inform the policy announcement Ministers had undertaken to give in the latter part of the year. The results of that analysis proved to be significant and were published by the ISG.¹⁷ The ISG's paper concluded that, on the basis of the analyses conducted at that time, the incidence of herd breakdowns has been 19% lower in proactive trial areas than in survey-only areas, and that analyses also revealed a 29% increase in cattle TB incidence on land neighbouring proactive areas, relative to land in and around survey-only areas.

Finance

RBCT expenditure for the Financial Year 2004/05 amounted to £6.5 million.

RBCT audits

The RBCT has been the subject of a number of independent audits and the findings have been published by Defra together with government responses.¹⁸ The areas covered in 2005 were the fourth report of humaneness of badger dispatch procedures and the statistical analysis of the trial itself.

Very careful consideration was given to badger welfare during the design of the RBCT. To ensure that dispatch procedures meet the highest standards of humaneness, the methods used have been subjected to regular audit. Each report has confirmed that observed badger dispatch was "humane". The fourth audit report, published in 2005, covered the period September 2004 to June 2005. The auditor's principal finding, that field staff carry out the task of killing badgers in a conscientious, efficient and humane manner was welcomed by Defra.

¹⁷ ISG published results in Nature 2005, doi.10.1038/nature04454.

¹⁸ <http://www.defra.gov.uk/animalh/tb/culling/p5aud.htm>

The auditor made three recommendations. Two of these, relating to a modification to the Standard Operating Procedure (SOP) regarding the reflex movements of badgers, and the archiving of all field staff training programmes and materials, were accepted. Defra accepted the basis of a third recommendation, relating to a modification of the SOP to reflect more strongly that accuracy is more important than speed in shooting a badger, but decided that at such a late stage in the RBCT (during the final RBCT culling season), a further change to the SOP was not warranted. However, Defra cascaded the auditor's message to field staff during regular pre-cull briefings, and undertook to change the SOP in the way the auditor suggested should culling take place in a further trapping season. A final audit of humane dispatch of badgers culled from July 2005, to the end of the RBCT culling in October 2005, has been completed and will be published in due course.

Statistical aspects of the RBCT are independently audited, and during 2005 the Statistical Auditor to the RBCT published his third report. The auditor reported that he had received a number of reports and interim analyses from the ISG, whose role, amongst other things, is to oversee the design and analysis of the RBCT. The auditor was able to confirm the correctness of the analyses and support the ISG's interpretation of them.

Further audits are planned up to the completion of the RBCT.

Badger Road Traffic Accident (RTA) survey

The purpose of the RTA survey was to estimate the prevalence of *M. bovis* infection in badgers within and outside RBCT areas, in five counties of high incidence (Cornwall, Devon, Gloucestershire, Herefordshire and Worcestershire), compared with two of lower incidence (Shropshire and Dorset), to validate the usefulness of badger RTA TB prevalence as an indicator of the TB status of badgers generally. The numbers of badgers collected, however, have been too few at the local (parish) level to allow meaningful analyses. The study found that using routine tests, TB was detected, on average, in around one in seven badger carcasses.

In general, the prevalence of *M. bovis* infection in badgers was higher in the northern group of counties involved (Gloucestershire, Herefordshire, Shropshire and Worcestershire) than those in the southern group (Cornwall, Devon and Dorset). However, it should be noted that prevalence of TB in any population tends to be cyclical. The ISG published the results of the RTA for 2002-2004 and these can be found at <http://www.defra.gov.uk/animalh/tb/publications/index.htm>

Although the ISG feels the RTA data can only provide useful comparison at County level, and then only in relative rather than absolute terms, officials are still examining the usefulness of RTA data as an indicator to focus surveillance for TB in cattle. For this reason the data has continued to be collected up to the end of 2005 and an analysis of the whole data set will be carried out in early 2006 looking at herd breakdowns around TB positive RTA badgers to inform decisions on the value of continuing RTA surveys in high and/or low TB risk areas.

Wildlife survey in Cumbria

The wildlife survey, to cover badgers and deer killed in RTAs and wild deer carcasses found with suspect lesions, over an area of 180 km² in the Furness Peninsula, which commenced at the beginning of January 2004, continued during 2005.

In 2005, a total of 17 carcasses were collected, 15 badgers and two deer. Of the 16 samples suitable for testing, all tested negative for the presence of bTB.

Badger culling consultation

In December 2005, the Government announced a public consultation on the culling of badgers for the control of bTB in cattle in England.¹⁹ The consultation aims to explain the issues and involve the wider public in the decision-making process on badger culling. The consultation seeks specific views on:

- **the principle:** whether, in light of all available evidence, a decision to cull badgers would help control the spread of bovine TB; and
- **the delivery options:** the possible ways that a proposed policy to cull badgers could be implemented.

Responses will be analysed carefully to inform decisions alongside other evidence.

Progress on the TB99 survey

The TB99 epidemiological survey was introduced in 1999, following comments in the Krebs Report (1998), and was designed to collect relevant data on a range of potential risk factors for analysis. The last data collected for TB99 related to the year 2004 and these data, along with that for 2002 and 2003 is being analysed by the ISG for publication in 2006.

An initial analysis of pre-Foot and Mouth Disease (FMD) TB99 data has already been published by the ISG.²⁰ This indicated that the strongest factors associated with an increased TB risk were movement of cattle onto the farm from markets or farm sales, operating a farm over multiple premises and the use of either covered yard or 'other' housing types. Spreading artificial fertilizers or farmyard manure on grazing land were both associated with decreased risk.

The Case Control Study 2005

This study replaced TB99 in 2005, being more focused on risks that emerged as key from initial analyses of TB99 data.

¹⁹ The badger culling consultation closed on 10 March 2006.

²⁰ W. Thomas Johnston, George Gettinby, David .R. Cox, Christl A. Donnelly, F. John Bourne, Richard S. Clifton-Hadley, Andrea M. Le Fevre, John P. McNerney, Andy Mitchell, W. Ivan Morrison and Rosie Woodroffe. Herd level risk factors associated with TB breakdowns prior to the 2001 UK foot and mouth disease epidemic among cattle herds in England. *Biology Letters*, 2005, 1, 53-6.

The study has operated from the areas administered by the SVS Animal Health Divisional Offices of Carmarthen, Carlisle, Stafford and Taunton, which means that case control-type epidemiological data has continued to be collected from herds in England and, for the first time, from Wales. The study area also includes emerging and established areas of TB as well as areas with low and high TB incidence.

The study has progressed well, being managed by a working group comprising representatives of the main bodies involved (i.e. SVS for data collection, VLA for data management, ISG for data analysis). The study is currently on track to deliver the target numbers of case and control forms in all four areas in which it is being applied by the end of March 2006.

Vaccine research

The long term aim is to develop a TB vaccine for cattle or wildlife and for the last five years between £1–2 million has been spent on such research each year. This has taken place principally at the VLA (Weybridge) as well as at the IAH (Compton), Health Protection Agency, Porton Down and AgResearch (New Zealand), with the production and evaluation of a range of candidate vaccines which include a range of live attenuated vaccines and sub-unit vaccines.

In a collaborative project between VLA, The Sanger Institute and the Institut Pasteur, the genome sequence of the only available TB vaccine, BCG, was completed. The completion of the genome sequences of *M. bovis* and *M. bovis* BCG will allow identification of the molecular basis for the attenuation of BCG, and insights into how to improve BCG or rationally attenuate *M. bovis* to produce better vaccines than BCG. In addition, comparison of the two genomes readily allows identification of *M. bovis* specific genes that can be used to develop diagnostic tests that may differentiate between animals vaccinated with BCG and those infected with *M. bovis*.

Approximately 60 vaccine candidates, including some emerging from the human TB research programme, have been tested in laboratory animals, and over ten have been tested in cattle. The most promising candidates have been those based on boosting the immune response to the existing BCG vaccine.

The natural progression for the research and development programme on vaccines is to move from the current laboratory studies to field experiments. This is needed to measure how various vaccines shown to be efficacious experimentally (and potentially associated diagnostics) perform. The natural transmission studies for cattle are, in the first instance, experimental models within which to test the efficacy of particular vaccine candidates under natural conditions. These should not be confused with or seen as a substitute to large scale field trials that will be required in the future for the licensing of such a vaccine.

The Vaccine Programme Advisory Group independently oversees the research currently being commissioned by Defra on TB vaccines and formulates a strategic direction on vaccines for the future. It feeds this information to the CVO's Interdepartmental Vaccine Steering Group which is continuing to work towards identifying the legal and administrative processes that would need to be followed to enable a vaccine to be used with the minimum of delay.

A study demonstrated the safety of a licensed human tuberculosis BCG vaccine to badgers. A report of this study has been submitted to the VMD as part of an application to obtain permission to perform a phase II safety/efficacy study in wild badgers. This represents the next step towards obtaining a licence for the use of BCG in badgers.

The VLA has continued its collaborative work with University College Dublin on vaccination/challenge studies in badgers, extending these to the evaluation of BCG given orally to both captive and wild badgers. Results from these studies will provide useful supporting data for any future application to licence the use of BCG in badgers in either country. The development of an improved oral BCG formulation is being continued in parallel with these studies.

Vaccination studies in badgers have been supported by the continual development and evaluation of improved diagnostic tests for TB in badgers.

- A rapid test for TB in badgers developed through an overseas collaboration has been fully validated. Although the best of the new tests is only as accurate as the existing Brock test, it has the advantage that it can be performed by unskilled staff within 15 minutes opening up the possibility of animal-side testing. A gamma interferon test for badgers has been developed and three versions of the test have been evaluated alongside two new serological tests using blood samples obtained from the RBCT and will be used to support the phase II safety/efficacy study in wild badgers.
- A novel means of detecting TB in badgers and cattle is being evaluated in collaboration with Cranfield University. The method employs an electronic 'nose' to sniff out the presence of infection using samples of serum from the animal.

Pathogenesis research

It is a high priority to assess the relative importance of cattle to cattle transmission of bTB, and £7 million of funding for three research projects has been provided.

- The first project at the VLA, IAH and DARDNI was completed during 2004. It considered alternative methods for the detection and enumeration of *M. bovis* in clinical samples. Results supported the use of the currently utilised culture techniques as the most reliable and sensitive detection method. It was found that nasal shedding of *M. bovis* differed between animals, varied over time and could be sporadic in nature.
- The second project involves the detailed pathological examination of 200 tuberculin skin-test positive reactors and 200 suspect false negatives that had been in contact with reactor cattle. This is a major project involving the VLA, Agricultural Development and Advisory Service (ADAS), the SVS and the IAH. An important finding of this work relates to the performance of the tuberculin skin test. For example, preliminary results indicate that 44% of in-contact animals, negative to the skin test shortly before entry to the study but subsequently confirmed by post-mortem or culture to have bTB, were already gIFN positive within 14 days of the skin test reading.

- The third project, is a study of disease dynamics and diagnostic strategies. Using experimentally infected cattle, it was demonstrated that one to five cells of *M. bovis* is sufficient to cause disease in cattle mimicking that seen in naturally infected reactor cattle. It was also demonstrated that the infectious dose of *M. bovis* had no bearing upon the time taken to obtain a positive gamma interferon response in those animals that went on to develop disease. Results showed that those animals that do go on to develop disease and therefore become a likely source of infection within a herd can be detected at an early stage with the gamma interferon test, and later with the tuberculin skin test. These data are in accord with very low numbers of bacteria transmitted between cattle via the aerosol route under natural conditions.

Predictive modelling and the use of cattle movement data

Collaborative work with the Environmental Research Group, Oxford University has taken forward the analysis of risk factors for the spread of bTB. The initial project employed two different modelling approaches, the first sought to establish the factors of importance in the spread of bTB. This type of model is suitable for short-term TB predictions. The second method provided a dynamic disease spread model, which was used for giving medium-term predictions. The predictive factors used were those found to be significant from previous modelling work (including indicators of seasonality, climatic variation, vegetation, land use, demography and cattle density) plus new predictors obtained from cattle movement records. Cattle movement variables were found to be very significant predictors of disease presence. The results of this project were published in Nature.²¹

This collaborative work is now being taken forward in a new Defra funded project. This project seeks to improve and enhance the model by incorporating new predictors (such as the length of stay of infected animals on premises). Part of the new project also aims to characterise movement types of particular importance in the spread of TB in a way that can inform policy on pre-movement testing.

Molecular epidemiology

Two typing methods are now being used routinely at the VLA – spoligotyping and Variable Number Tandem Repeats (VNTR). Together, the two methods provide good discrimination of the isolates, providing assistance to the SVS for disease tracing and control.

Analysis of the population structure of *M. bovis* in GB revealed that one group of related strains, the SB0140:VLA type 9 clonal complex, is responsible for approximately 85% of all herd breakdowns in GB and that different genotypes of this clonal complex have emerged in different geographical areas. An analysis of variation within the two most common spoligotypes of this clonal complex concluded that the epidemic of bTB in GB may be seen as a series of local epidemics caused by different strains emerging in different areas of the country.²²

²¹ Gilbert, M., A. Mitchell, D. Bourn, J. Mawdsley, R. Clifton-Hadley and W. Wint. 'The role of cattle movements in determining the distribution and spread of Bovine TB in Britain' - Nature Vol 435, 491-496 (2005)

²² Smith N. H., J. Dale, J. Inwald, S. Palmer, S. V. Gordon, R. G. Hewinson, and J. Maynard Smith. The population structure of *Mycobacterium bovis* in Great Britain: clonal expansion. Proc Natl Acad Sci U S A. Vol 100:15271-5 (2003)

The geographical localisation of these strains was exploited to determine the source of *M. bovis* as a result of farmers purchasing infected animals. For example, new breakdowns occurring in geographically separate and previously TB-free regions of the country were linked by combining genotyping and cattle movement data to the movement of cattle from TB hotspot areas as a result of restocking herds in 2002 following the FMD outbreak. This approach highlighted that the restocking of herds had resulted in the introduction of *M. bovis* isolates with spoligotypes that had not been seen in these areas of the country before. These data supported a policy of pre-movement testing of cattle to prevent movement of infected animals, especially those that are to be moved from areas of the country that are at high risk of *M. bovis* infection to areas of low risk for the disease.

Typing data was also used to support interpretation of findings from the RBCT. In one such study, *M. bovis* infections in badgers and cattle were shown to be spatially associated on a scale of 1–2km. Badgers and cattle infected with the same strain type of *M. bovis* were particularly closely correlated. These observational data support the hypothesis that transmission occurs between the two host species, however, they could not be used to evaluate the relative importance of badger-cattle and cattle-badger transmission.

Badger Ecology

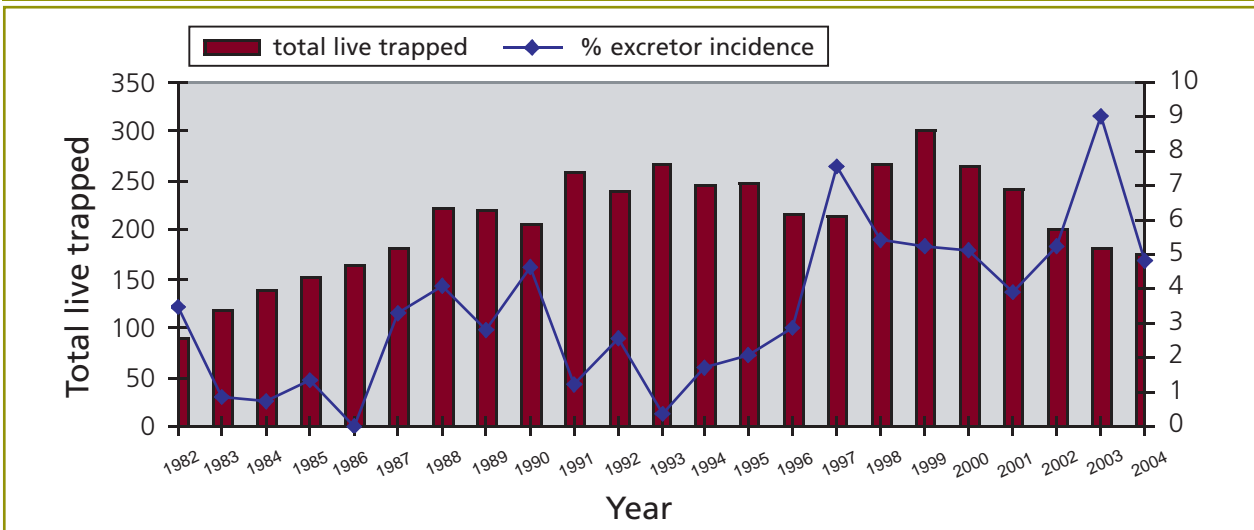
The development of sustainable policies to control *M. bovis* transmission from badgers to cattle is only possible through a deeper understanding of the ecology and dynamics of disease in badger populations, and their interactions with cattle. To this end, during 2005 the Central Science Laboratory (CSL) continued to collect data from an intensively studied wild badger population at Woodchester Park, and initiated a similar study in 2004 on a nearby population, part of which has been subjected to culling as part of the RBCT.

The configuration of badger social groups in both populations was determined by bait marking in the spring of 2005. The high density undisturbed population at Woodchester had a stable configuration of largely mutually exclusive group territories. A similar pattern emerged for the lower density but undisturbed part of the other population, whereas group ranges in the previously culled area were much less well defined.

Live capture of badgers in 2005 provided information on the demographic structure and epidemiology of *M. bovis* infection in both populations. A total of 191 different individuals were captured at Woodchester and 52 in the lower density population. Each animal was examined and clinical samples were taken for the detection of *M. bovis* infection by microbiological culture and antibody detection (ELISA test). Data from Woodchester will continue to contribute to the only long-term data series on *M. bovis* in a badger population (**Figure B2.9**). Preliminary results suggest a minimum prevalence of 4.7% at Woodchester Park, and 8% in the lower density population.

In the lower density population an additional 18 animals were fitted with radio-collars in 2005 to obtain more information on badger behaviour in response to culling. Home range estimates have so far been obtained for 30 animals since June 2004. Preliminary analyses indicate that badger home ranges in the culled part of the study area are 40% larger than those in the un-culled part.

Figure B2.9: Incidence of *M. bovis* culture positive badgers and population size at Woodchester Park.



A badger is released back to its sett after capture, sampling and fitting of a radio collar. (Photo: Lee Morgan).

Both populations will continue to be monitored in 2006 during which time a comprehensive epidemiological analysis of the Woodchester population and a summary of the behavioural response to the culling of badgers in the lower density population will be conducted.

Models from the CSL and Reading University were used to investigate the costs and benefits of badger culling to reduce the incidence of TB breakdown in cattle herds.

Important assumptions remain untested, and further data is available which will be used in the later stages. Preliminary assessment of cattle movement data suggest that between 26% and 85% of cattle herd breakdowns were not caused simply by cattle moving into the index herd. Badger culling was

simulated at different scales, and the work demonstrated the ability to combine the model and the economic analysis. Further work is underway to improve the cattle modelling, and include badger social perturbation. One scientific paper is already in press in the *Veterinary Journal*.²³ This work will help to identify optimal TB management strategies and the work will feed directly into policy development.

²³ Smith GC, Bennett R, Wilkinson D, Cooke R (2006). A cost benefit analysis of culling badgers to control bovine tuberculosis. *The Veterinary Journal*. Epub 23 Jan.

Monitoring of the impact on selected mammal populations of the removal of badgers continued in areas within the RBCT. Preliminary results indicate that fox populations responded to badger removal by increasing in the first two years, then stabilised at this new level as badger numbers continued to be depressed. There was evidence that hare populations showed the opposite pattern, which would be consistent with the fact that foxes are their main predators. Hedgehog populations increased steadily in proactive areas over the period of the RBCT, and this trend continued in 2005. This is likely to be due to a reduction in predation levels by badgers. Therefore the removal of badgers at the scale of the RBCT appears to have considerable ecological consequences. Papers describing these effects were published in the *Journal of Zoology*, *Mammal Review*, and further papers are in review in the *Journal of Applied Ecology*.²⁴

A project to estimate relative badger density in five proactive/control RBCT area pairs aims to provide a quantified estimate of the impact of culling on badger populations in proactive areas, as there was no way to assess this previously. Surveys were carried out immediately post-culling. Surveyors carried out spotlight surveys along road transects. Relative densities were calculated using distance sampling theory. In all five areas, the density of badgers was lower in the culled areas than in the control areas, with estimates ranging from 28% to 90% lower.

Estimation of the extent and frequency of badger visits to farm buildings and facilities was achieved during the final stages of field work on a project during which 36 farms were surveyed in TB hotspots in southwest England. Signs of badger activity were found within the yards of 39% of farms, which is likely to represent a considerable underestimate of badger activity. On 29% of these farms either badger faeces or carcasses tested positive for *M. bovis*. Badgers most frequently visited feed stores, where they fed on all forms of stored feed, particularly during the summer months, but visits were made by badgers all year round. Badgers were also observed regularly foraging in cattle troughs and interacting with cattle inside cattle housing.



Estimating badger abundance from distance sampling surveys.

Conversely, direct interactions between badgers and cattle at pasture were rare. Badger activity within farmyards was most frequently associated with foraging and feeding. The opinion of the researcher was that biosecurity practices on most farms were of a very low standard, generally allowing badgers to have free access to stored feed and cattle housing.

²⁴ J. Davison, R.P. Young, T.D. Hounscome, I.D. Trewby, M. Claridge, R.W. Yarnell, N. Walker & G.J. Wilson (In Review) A comparison of distance sampling and scat counts for monitoring fox populations. *Journal of Applied Ecology*. Hounscome, T.D. & Delahay, R.J. (2005). Birds in the diet of the Eurasian badger *Meles meles*: a review and meta-analysis. *Mammal Review*, 35: 199–209. Young, R. P., Davison, J., Trewby, I. D., Wilson, G. J., Delahay, R. J. & Doncaster, C. P. (in press). The abundance of hedgehogs *Erinaceus europaeus* in relation to the density and distribution of badgers *Meles meles*. *Journal of Zoology*.

These results support the hypothesis that badger visits to farm buildings are a widespread and considerable transmission threat to cattle across the southwest of England and emphasise the need for farmers to implement biosecurity measures to reduce or eliminate the likelihood of badgers gaining access to cattle and stored feed.

A direct consequence of the identification of badger visits to farm buildings posing a widespread and considerable risk to cattle was the funding of a new project to identify cost-effective methods of reducing or preventing contact between badgers and cattle within farmyards. Within this project, which commenced in November 2005, 64 farms throughout Gloucestershire and the surrounding counties will be investigated under an experiment to test several different methods of protecting farmyard resources. Barrier methods, such as gates, doors, sheeting and electric fencing will be used to prevent badgers from accessing cattle housing, feed stores, silage clamps and troughs. The costs of implementing these measures will be compared with the benefits of preventing badger/cattle contact and reducing the risk of TB transmission to cattle within an investment appraisal. This will provide direct and tangible evidence on the net benefits that can be gained by farmers by implementing good husbandry and biosecurity practices.

Economics research

Laboratory and field studies are a major part of the bTB Research and Development Programme. However, to be implemented, research outputs must be shown to be sustainable and cost effective. Recent research has shown that a molecular technique for *M. bovis* identification may prove useful in decreasing the time taken to confirm a skin test reactor as positive. In light of this we have put in place research to review which technique may be the most appropriate in terms of scaling up without loss of sensitivity, and to look at the economics of implementing it in the routine diagnostic culturing system to see whether it would be cost-effective.

Some potential policies for bTB include control of badger populations. In light of this Defra undertook some research to establish a valuation for the costs and benefits to society associated with changes in badger populations in specific geographical areas affected by bTB and alternative control policies. Other work has analysed the costs to farmers of a herd breakdown and modelled different bTB control strategies to provide an estimate of their economic benefit to GB. The report is also available on the Defra website.

TB in species other than cattle and badgers

Notification to DVMs of suspected TB in deer has been a legal obligation under TB (Deer) Orders since 1989. Following a review of existing measures in 2005, a new TB (England) Order will be introduced in March 2006. This will extend TB controls by requiring the detection of tuberculous lesions in the carcass of any farmed mammal or a mammal kept as a pet to be notified to the DVM. It will also be compulsory to notify the VLA if *M. bovis* is identified by laboratory examination of samples taken from a mammal (other than humans), unless the organism was present in the sample as part of an agreed research programme. The new TB (Scotland) Order 2005 included similar provisions.

Due to the persistence of widespread *M. bovis* infection in cattle and badgers in parts of England and Wales, occasional spillover of infection to companion animals, farmed mammals (other than cattle) and wild mammals (other than deer) is to be expected. Pending the introduction of the new TB (England) Order in 2006, the SVS and VLA regional laboratories continued to facilitate during 2005 the submission of tissue specimens to VLA Weybridge for mycobacterial culture and typing, free of charge to the submitter, as long as there was strong pathological evidence of mycobacterial disease. **Table B2.4** provides a summary of suspect TB cases in species other than cattle and badgers in 2005.

Deer surveillance

Statutory submissions of deer carcasses with suspect TB lesions suggest that the incidence of bTB in the national wild deer herd is low and localised, although it is accepted that the level of surveillance and awareness of the disease in deer is not uniform across the country. Meat from wild deer destined for the domestic market will be subject to statutory meat inspection from 1st January 2006.

Deer stalkers must receive training in carcase inspection and have a statutory obligation to report suspicious TB lesions to the local DVM. Meat inspection of farmed deer provides an additional source of surveillance data to support the view that TB is not widespread in the farmed population. During 2005, *M. bovis* was isolated from 33 of 110 deer carcasses with suspicious tuberculous lesions reported to the SVS and VLA (**Table B2.4**). The vast majority of samples and carcasses were submitted by deer stalkers and game keepers, and were not part of a systematic sampling strategy. All of the positive specimens were from wild deer shot or found dead in south west England and the Welsh Borders, except one farmed red deer from a TB-restricted cattle holding in Devon and two fallow deer, reported in ornamental park herds in Gloucester and Cumbria respectively. The latter animal was a buck shot in September 2005 in an enclosed park herd in the Furness Peninsula of Cumbria. The premises had been under movement restrictions since November 2002 and the remaining 37 fallow deer were eventually culled in early 2006. Tuberculous lesions and *M. bovis* were identified in 12 of the 16 carcasses submitted for post mortem examination.

Deer research

Following on from previous research²⁵ which identified a relatively high prevalence of TB infection in wild deer in TB hotspots, a quantitative risk assessment is being undertaken to identify whether wild deer are likely to pose a TB transmission risk to cattle. This is underpinned by field data collection and information from the literature. Direct observations of contact and estimates of indirect contact between deer and cattle (by mapping deer and cattle dung at pasture) have been undertaken on 15 of 30 sample farms in the west of England. In addition, data sheets were supplied to more than 300 deer stalkers to record their observations on deer/cattle interactions throughout the southwest of England. Samples of material collected from 220 culled deer are undergoing histological examination to determine the likelihood of *M. bovis* shedding by each deer species and a sub-sample of these is being investigated by Polymerase Chain Reaction (PCR) and genotyping. This will provide a clearer picture on the presence, prevalence, and true species and genetic type of Mycobacterium within the deer samples, to inform the risk model.

²⁵ Full report of research is available at:
http://www2.defra.gov.uk/research/project_data/More.asp?I=SE3010&M=KWS&V=se3010&SCOPE=0

Cats and other companion animals

The impending changes to the TB Orders, the provision of a free TB referral service at VLA and increased awareness of TB amongst companion animal practitioners resulted in a significant increase in the numbers of cat samples examined by VLA in 2005. Tissue specimens from 98 cats were submitted for mycobacterial culture, with the results outlined in **Table B2.4**. Provisional results for 2005 show *M. bovis* infection has been confirmed in 12 of those cats. Cultures for mycobacteria had yet to be completed on four of those samples.²⁶

Over a period of four months, a total of 12 ferrets (*Mustela furo*) from a group of 25 at an animal rescue centre in East Sussex were euthanased following weight loss and development of abdominal masses. The private veterinary surgeon found enlarged caseous mesenteric lymph nodes at post mortem examination of one of the ferrets and submitted tissue samples to the Mycobacterium Regional Centre in Cardiff. *M. bovis* was cultured from the lesions and was later identified at VLA Weybridge as spoligotype 13. Mesenteric, peritoneal and lung lesions were found in two other diseased ferrets submitted to the VLA, from which *M. bovis* spoligotype 13 was isolated again. This is the predominant strain of *M. bovis* found in reactor cattle in the South Downs endemic TB area of East Sussex, located some 18 miles away from the affected premises. Most of the ferrets in the colony are found abandoned and occasionally pet ferrets are brought in, i.e. these may be pet or working ferrets. The rescue centre also takes in hedgehogs, foxes, badgers, rabbits, dogs and cats. Inspection of the ferret intake records at the rescue centre failed to disclose any link with the South Downs area. The SVS informed the medical authorities and placed the ferret colony at the centre under TB movement restrictions. Against veterinary advice, the rescue centre managers elected not to destroy the remaining ferrets.

Farmed animals other than cattle

In March 2005, MHS inspectors reported lesions typical of TB in the carcasses of five fattening pigs sent to slaughter from a smallholding near Bodmin (mid-Cornwall). A few weeks later, tuberculous lesions were detected at slaughter in a further six pig carcasses from the same litter. *M. bovis* was isolated at VLA Weybridge from seven of the affected carcasses. All isolates were identified as spoligotype 15, the predominant strain of *M. bovis* in cattle in the area. Comparative tuberculin testing of the sow and boar at the farm of origin of the infected litter showed significant bovine reactions and, as a result, the owner agreed to cull both animals. At post mortem examination these had multiple typical lesions of TB from which *M. bovis* was isolated. Although this small pig herd was infected with a strain of *M. bovis* identical to that found in cattle in the area, epidemiological investigations (including tuberculin testing of the resident and other cattle herds) failed to demonstrate an obvious route of infection. TB caused by *M. bovis* was also detected as a result of meat inspection of pigs from two premises in Worcestershire and in a sow from a small pig and cattle holding located within the Woodchester Park badger study area in Gloucestershire. In all three cases, the strain of *M. bovis* isolated from the diseased pigs was that considered endemic in cattle and wildlife in the respective areas.

²⁶ A brief description of those 12 cases of feline *M. bovis* infection diagnosed in 2005 was published in the Veterinary Record (Monies, R., Jahans, K., de la Rua, R., 2006. Bovine tuberculosis in cats (letter) Veterinary Record 158(7), 245-246)

Post mortem investigations at Bristol University Veterinary School identified tuberculous pneumonia in an euthanised llama from a small herd in Avon. Culture and molecular typing at VLA Weybridge of the isolate from this case demonstrated that it was the most prevalent strain of *M. bovis* in the vicinity. The remaining llamas are to undergo tuberculin and blood testing in early 2006, to enable the lifting of movement restrictions.

A cull ewe from a sheep farm near Stroud (Gloucestershire) was found to have lesions typical of TB at routine slaughter in February 2005. In October, another ewe in a sheep consignment originating at Worcester market showed tuberculous lesions at slaughter. *M. bovis* was isolated in both cases. The spoligotype of the isolates was identical to that commonly associated to TB breakdowns in east Gloucestershire and in Hereford-Worcestershire, respectively.

Exotic (zoo) animals

Of the several carcasses or tissue specimens from zoo animals submitted to VLA for mycobacterial examination (**Table B2.4**), bTB was only confirmed in an eland (*Taurotragus oryx*) kept in a safari park in Merseyside. After a three-week period of weight loss and terminal respiratory distress, this animal was necropsied and found to have multiple miliary abscesses in both lungs and associated lymph nodes. *M. bovis* spoligotype 21 was cultured from the tuberculous lesions. This strain of the organism is most frequently isolated from cattle in Somerset, Avon and Dorset with sporadic isolates found further north associated with purchased stock. This incident constituted the first documented isolation of the bacterium from elands in the UK. Other animals in the enclosure in which the infected eland had been kept were placed under movement restrictions.

Appropriate biosecurity advice was given by the SVS and increased TB surveillance of casualty animals in the park was instigated. No further cases of *M. bovis* infection were detected by post mortem examination and culture in 2005. Live animal testing was not considered feasible by the park management. A small number of elands from the park that had been forward traced to other premises were live tested with positive results, but infection in those animals could not be confirmed at post mortem examination.



Eland (Taurotragus oryx). Post mortem investigations in 2005 established the presence of bTB in a herd of captive eland in a safari park in Merseyside.

Section B – Chapter B2

Table B2.4: TB surveillance in animals other than cattle and badgers: number of samples from suspect cases submitted to VLA in 2005 and bacteriologically positive results.

Species	Number of suspect TB cases investigated	Number positive for mycobacteria other than <i>M. bovis</i>	Number positive for <i>M. bovis</i>	Origin of <i>M. bovis</i> -positive animals
Deer				
Red (farmed)	12	<i>M. avium</i> (8)	1	Devon
Red (park)	2	0	0	–
Red (wild)	31	<i>M. avium</i> (3) Unclassified (1)	21	Somerset (18, mostly from Exmoor) Devon (3)
Fallow (wild)	18	<i>M. kansasii</i> (2)	7	Herefordshire (3) Gloucestershire (3) Shropshire (1)
Fallow (park)	3 ^a	0	2	Gloucestershire (1) Cumbria (1) ^a
Roe (wild)	40 ^b	<i>M. avium</i> (3)	3	Devon (2) Somerset (1)
Roe (park)	2	0	0	–
Sika (wild)	1	0	0	–
Muntjac (wild)	3 ^c	0	0	–
Muntjac (park)	1	0	0	–
Unknown deer species (wild)	1	0	0	–
Wild animals (excl. deer)				
Otter	3	0	0	–
Companion animals				
Domestic cat	98 ^d	<i>M. microti</i> (13) <i>M. avium</i> (5) <i>M. malmoense</i> (1) <i>M. celatum</i> (1) Unclassified (2)	12	Cornwall (2) Devon (1) Somerset (1) Gloucestershire (1) Worcestershire (1) Staffordshire (1) Cheshire ^e (1) East Sussex (1) Ceredigion (1) Powys (1) West Glamorgan (1)
Dog	11	<i>M. avium</i> (1)	0	–
Ferret	7	0	3	East Sussex (3)
Pony	1	0	0	–
<i>Continued</i>				

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Table B2.4: TB surveillance in animals other than cattle and badgers: number of samples from suspect cases submitted to VLA in 2005 and bacteriologically positive results.

Species	Number of suspect TB cases investigated	Number positive for mycobacteria other than <i>M. bovis</i>	Number positive for <i>M. bovis</i>	Origin of <i>M. bovis</i> positive animals
Farmed animals (excl. deer)				
Domestic pig	36 ^f	<i>M. avium</i> (9) <i>M. microti</i> (2)	12	Cornwall (9) Worcestershire (2) Gloucestershire (1)
Sheep	4	<i>M. avium</i> (1)	2	Gloucestershire (1) Worcestershire (1)
Pygmy goats	3	0	0	–
Equine (pony)	1	0	0	–
Alpaca	2	<i>M. microti</i> (1)	0	–
Llama	4 ^g	0	1	Avon
Zoo animals^h				
Eland	5	0	1	Merseyside
African elephant (trunk wash)	1	0	0	–
Asian elephant (trunk wash)	1	0	0	–
Elephant (species unknown)	8	0	0	–
Rhinoceros	1	–	0	–
Bongo antelope	2	<i>M. kansasii</i> (1)	0	–
Duiker	1	0	0	–
Bactrian camel	1	0	0	–
Camel (species unknown)	1	0	0	–
Gemsbok	1 ⁱ	–	–	–
Lechwe	2	0	0	–
Wildebeest	1	0	0	–
North American bison	1	0	0	–
Total	310	54	65	

- (a) One fallow deer carcase was submitted as part of a survey of found-dead deer in southwest Cumbria. This case tested positive for *M. bovis*.
- (b) Three carcasses (all negative) submitted as part of a survey of found-dead deer.
- (c) One culture result was still awaited when this table was compiled.
- (d) Two culture results were still awaited.
- (e) Recently moved from Staffordshire.
- (f) Some pig submissions consisted of samples pooled from more than one carcase at the slaughterhouse.
- (g) One culture result was still awaited.
- (h) Carcasses of 3 Roan antelopes, one zebra, one oryx, one Dama gazelle, one Dorcas gazelle, one greater kudu, one gemsbok (in addition to the one listed above) and one waterbuck were also examined at post mortem for evidence of tuberculous lesions. As a result of negative post mortem findings, cultures for Mycobacteria were not carried out.
- (i) Culture result awaited.

B3: Bovine Spongiform Encephalopathy, other Transmissible Spongiform Encephalopathies and animal by-products

The Bovine Spongiform Encephalopathy (BSE) epidemic in GB continued to decline in 2005. Most BSE cases were detected by targeted surveillance. The remainder were detected by scanning surveillance of clinical suspects. Significant BSE milestones included the replacement of the Over Thirty Month (OTM) Rule, the European Food Safety Authority's confirmation that the UK could now be considered as a moderate risk status country in terms of BSE and a satisfactory European Commission Food and Veterinary Office (FVO) mission on BSE controls. The team involved in the replacement of the OTM Rule and the FVO mission won the most outstanding Defra Team Award for their achievements.

The National Scrapie Plan (NSP) continues to be a very successful initiative and has seen a steady increase in new members to the Ram Genotyping Scheme. There has been continued surveillance of Transmissible Spongiform Encephalopathies (TSEs) in sheep and goats for the presence of BSE and to date nearly 3,000 sheep samples have been analysed using differential diagnostic methods without detection of BSE. There was also a FVO mission on small ruminant TSEs, which concluded that, excepting minor shortcomings, there is a satisfactory level of compliance with EU requirements on the control of TSE in small ruminants. In addition to cases detected by targeted surveillance, atypical scrapie has now been identified in clinically affected sheep and in flocks where classical scrapie is present.

Animal by-products include animal carcasses, parts of carcasses and other products of animal origin, which are not intended for human consumption. Controls on the handling treatment and disposal of animal by-products protect public and animal health in relation to TSEs and other diseases.

The BSE epidemic

The BSE epidemic continued to show a steady decline during 2005. This is shown in **Table B3.1**.

Table B3.1: The annual percentage change in BSE incidence in Great Britain from 2000 to 2005

Years	Percentage Change in BSE Incidence
2000 to 2001	-18%
2001 to 2002	-7%
2002 to 2003	-47%
2003 to 2004	-44%
2004 to 2005	-34%

On average, there were fewer than four clinical BSE suspects restricted in GB each week. BSE was confirmed in 25% of clinical BSE suspects slaughtered, which is comparable to the 2004 confirmation rate of 26%. As the incidence of BSE declines, diseases with similar clinical signs (e.g. listeriosis) form a greater percentage of clinical suspects. Defra and the devolved administrations are committed to raising and maintaining awareness of BSE. In 2005, Defra distributed a DVD, produced by the VLA, on the clinical signs and diagnosis of BSE, to veterinary surgeons in the SVS, private practice and veterinary education. Defra provided an account of the differential diagnosis of BSE to the Spongiform Encephalopathy Committee (SEAC), which also viewed the DVD. The total number of confirmed cases of BSE in GB detected by scanning surveillance of clinical suspects fell from 82 in 2004, to 39 in 2005, a reduction of over 52%.

A further 164 BSE cases were confirmed in GB from the 547,366 animals tested in the targeted surveillance programme. This represents a 28% reduction from the 227 cases detected among the 515,507 animals tested in 2004. During the 12-month period ending 25 October 2005, GB sampled all healthy cattle slaughtered under the OTM Scheme and born after July 1996. More cattle were tested through targeted surveillance in 2005 than in previous years. Although the incidence of BSE cases detected by targeted surveillance increased between 1999 and 2002, the percentage of positive animals declined steadily as the number of tested animals increased. This is shown in **Table B3.2**.

Table B3.2: The percentage of animals testing positive for BSE under targeted surveillance between 1999 and 2005

Year	Total Tested under Targeted Surveillance	Number Positive	Percentage Positive
1999	3,951	18	0.46
2000	10,049	44	0.44
2001	80,444	332	0.41
2002	333,064	594	0.18
2003	394,705	375	0.09
2004	515,507	227	0.04
2005	547,366	164	0.03

Figure B3.1 shows confirmed cases, identified by both scanning and targeted surveillance since 1988. **Figure B3.2** shows confirmed cases since 1999. Detailed BSE statistics are available on the Defra website at

<http://www.defra.gov.uk/animalh/bse/statistics/index.html>

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Figure B3.1: Confirmed BSE cases from 1988: scanning surveillance cases by year of restriction and targeted surveillance cases by year of death

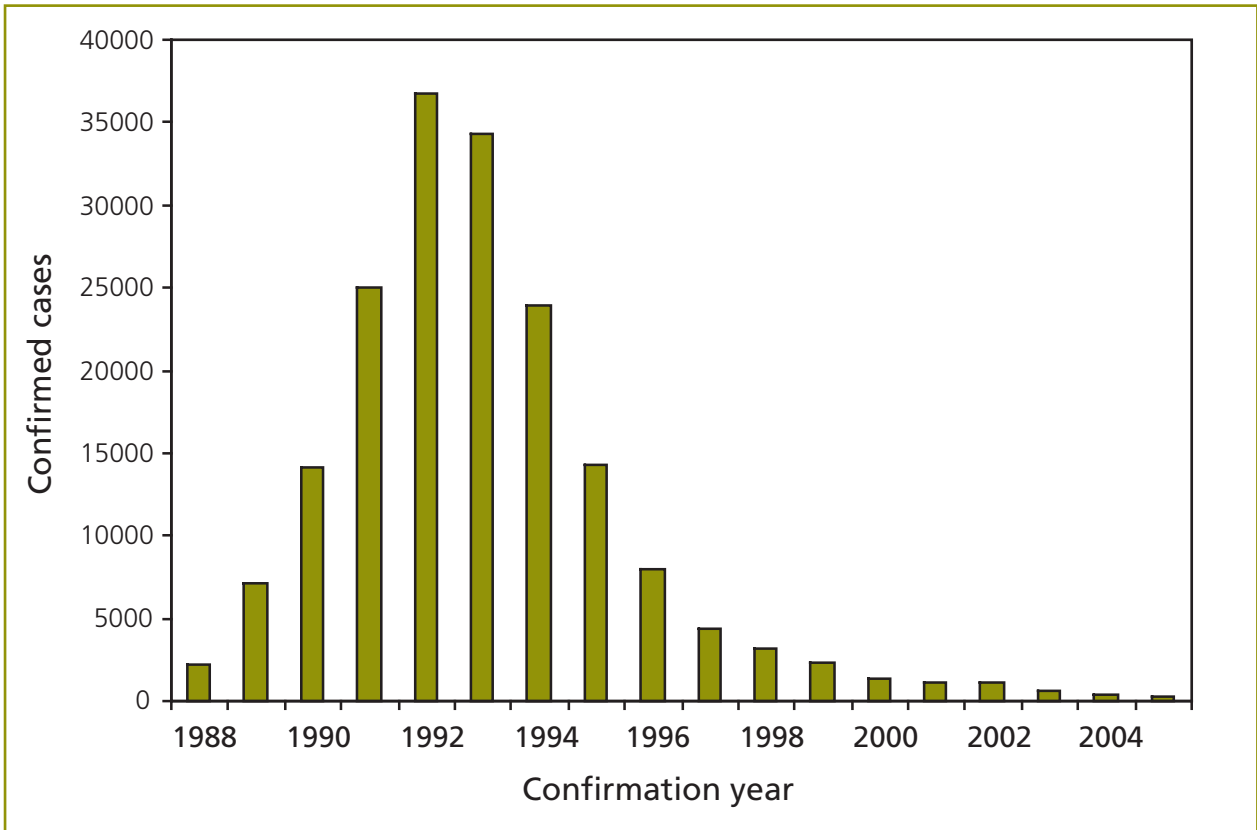
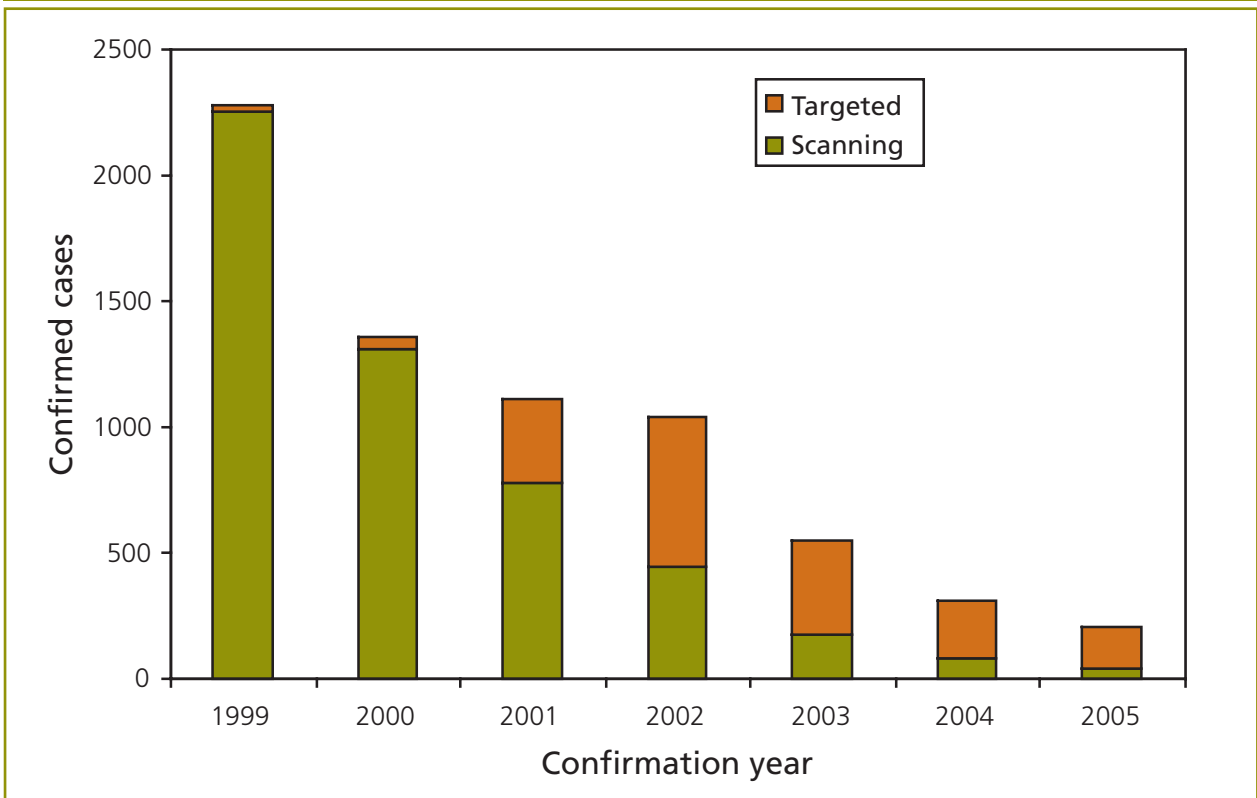


Figure B3.2: Confirmed BSE cases from 1999: scanning surveillance cases by year of restriction and targeted surveillance cases by year of death



Defra's Public Service Agreement (PSA) targets include a reduction in the number of cases of BSE in GB detected by both scanning and targeted surveillance to less than 60 in 2006, with the disease being eradicated by 2010. Although the 2005 statistics show an encouraging decline in the incidence of BSE, Defra will slightly exceed its 2006 target unless the current rate of decline increases. Due to the long incubation period of BSE, this will be determined by past events and will be mainly affected by the longevity of the sub-population of cattle born before August 1996, in which the estimated prevalence of infection is greatest. The Older Cattle Disposal Scheme, is expected to reduce the longevity of this sub-population. However any future increase in targeted surveillance of this sub-population (from the current 10,000 per year) may increase the observed incidence.

Cases born after July 1996

Additional measures to prohibit the feeding of mammalian meat and bone meal to all farmed livestock have been in place in GB since 1 August 1996. This is regarded as the date the reinforced feed ban became effective. BSE cases born after 31 July 1996 are referred to as born after the reinforced ban (BARB) cases. The main routes of infection for BARB cases are thought to be the persistence of traces of infectious material in contaminated feed produced before August 1996 or traces of infectious material in imported feed ingredients, particularly those imported via other EU Member States before feed rules were tightened in 2001.

By the end of 2005, there were a total of 123 BARB cases confirmed in GB²⁷, 29 of which were confirmed in 2005. This is a 32% increase on the 22 BARB cases confirmed in 2004. The culling of cohorts of BSE cases resulted in six of the 2005 BARB cases. Continued or increasing numbers of these cases could also impact on the achievement of the PSA targets referred to above.

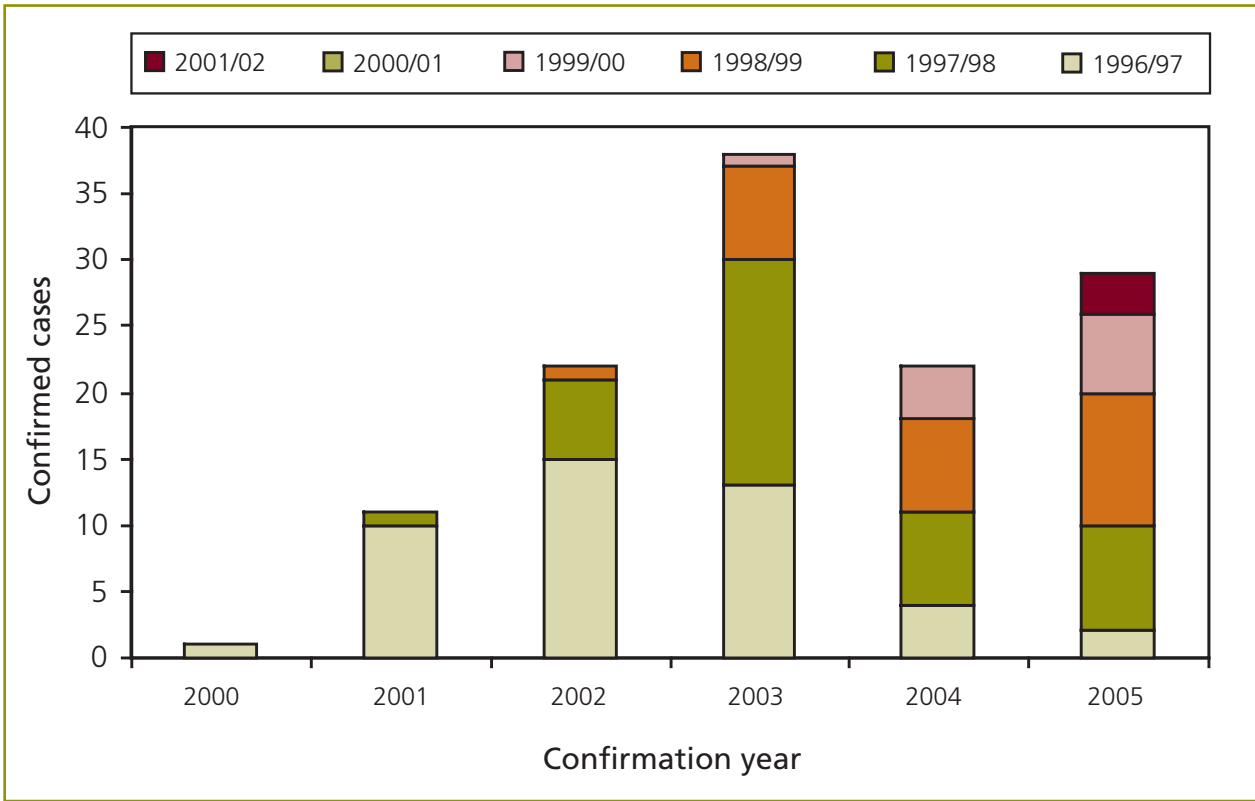
Defra confirmed the first BARB cases born in 2001 and 2002. Detailed epidemiological investigations into the single Pembrokeshire herd of origin concluded that these three animals were exposed to feed produced in 1998. There is a cluster of BARB cases born in south west Wales in 1997/98. The SVS also carried out detailed epidemiological investigations into other herds generating multiple BARB cases. There is evidence that some of these cases may have been exposed to feed retained on farms. Defra and the devolved administrations advised farmers to clean out feed stores regularly.

Figure B3.3 shows the total number of BARB cases confirmed in GB by birth cohort year (1 August to 31 July). **Figure B3.4** shows the total number of BARB cases confirmed in GB by surveillance stream.

²⁷ These figures do not include two confirmed cases of BSE in animals, which died in December 2005. These two cases were identified under the compulsory BSE surveillance programme, an aspect of which requires the UK to test all fallen stock cattle aged 24 months or over. The dates of birth of these two animals are unknown although they are likely to have been born after July 1996.

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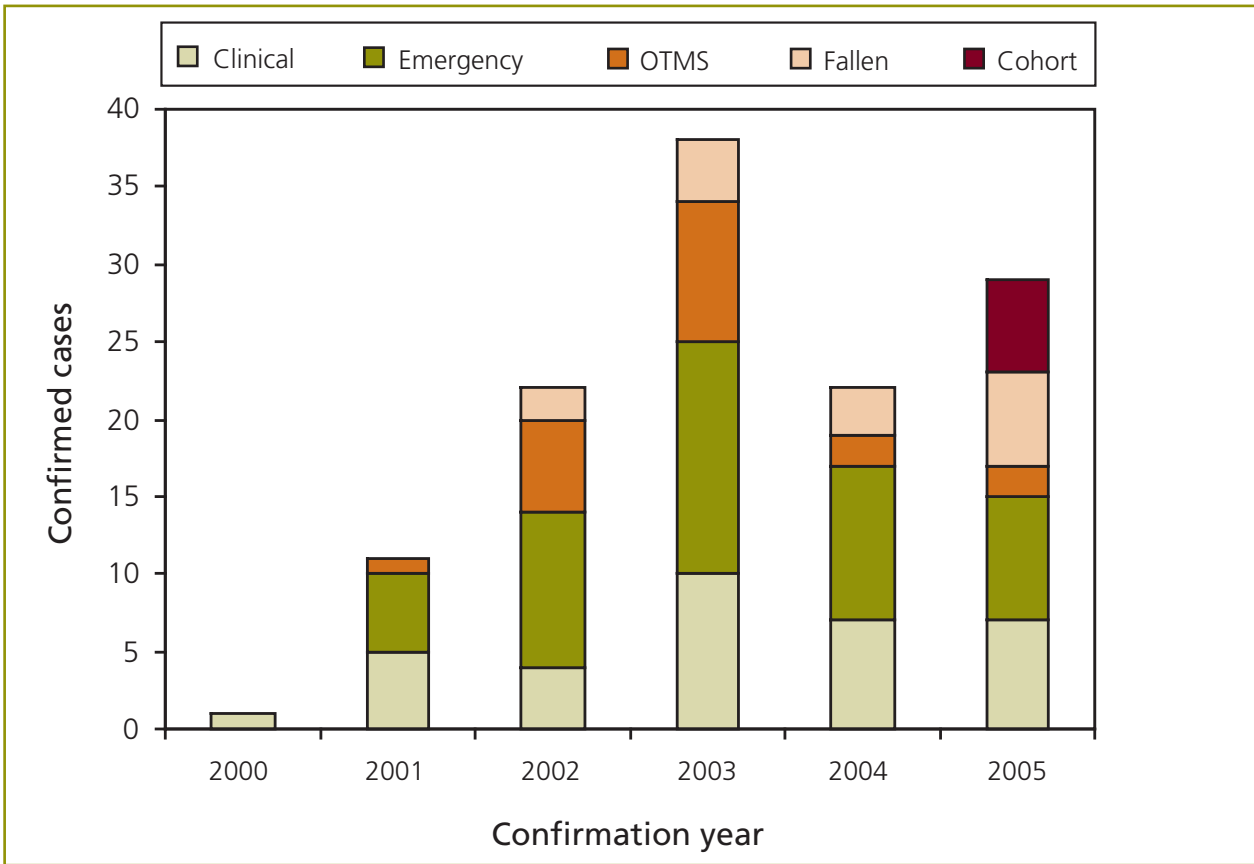
Figure B3.3: Total number of BARB cases confirmed in GB by birth cohort year



Note:

i. One case in the 1996/97 cohort confirmed in 2002, was born in Republic of Ireland and imported at 20 months of age

Figure B3.4: Total number of BARB cases confirmed in GB by surveillance stream



Notes:

- i. Cohort: Birth and rearing cohorts of affected cases
- ii. Fallen: Fallen stock
- iii. OTMS: Healthy animals disposed of into OTM Scheme
- iv. Emergency: Animals subject to emergency slaughter
- v. Clinical: Animals detected by scanning surveillance

An epidemiological analysis provided evidence of a reduced risk of infection in recent birth cohorts. This was particularly marked in the reduced prevalence between the 1996/97 and the 1997/98 birth cohorts. The three 2001/02 birth cohort cases were excluded from this analysis as epidemiological investigations suggested that they resulted from exposure to feedstuffs produced in 1998. The results are shown in **Table B3.3**.

In July 2005, Defra published Professor William Hill's independent review of BARB cases. The review found that the BSE controls in place are soundly based and concluded that elimination of feed borne sources is the key to elimination of BSE. Defra is preparing a response to Professor Hill's recommendations. SEAC considered Professor Hill's review and Defra provided the Committee with regular updates on BARB cases.

Further information on BARB cases is available at <http://www.defra.gov.uk/animalh/bse/controls-eradication/feedban-bornafterban.html>

Table B3.3: An estimate of infection in the BARB cohorts based on surveillance data up to the end of March 30 2005, and using a previously developed model ²⁸

Birth Cohort	Prevalence* Infected animals/10 ⁶	95% CI
1996/97	130	80–180
1997/98	70	40–100
1998/99	40	20–70
1999/00	40	20–70
2000/01	0	0–24
*maximum likelihood estimate		

BSE cohort cull

Regulation (EC) No.999/2001 requires that all Member States identify, trace, restrict and cull the cohorts of confirmed BSE cases. Cohorts are cattle, which were either:

- born in the same herd as a BSE case, up to a year before or after its birth; or
- reared with a BSE case when both were up to a year old.

Cohorts might have consumed the same feed as the BSE case during the first year of their lives. Feed contaminated with the BSE agent is the most important source of BSE infection for cattle. Experts believe that the majority of BSE cases were infected during the first year of life.

Until 2005, the UK did not proactively cull cohorts aged over thirty months, because the OTM rule acted as an equivalent measure. Along with the UK's other BSE controls (e.g. removal of specified risk material), the OTM rule provided consumers with equivalent protection from BSE. Before the OTM rule could be amended, the UK needed to cull all cohorts born after 31 July 1996. This meant culling the existing backlog of cohorts along with the cohorts of new BSE cases.

On 1 March 2005, the SVS began to cull the backlog of cohorts of BSE cases. This was completed by the end of June 2005. The cohorts of new BSE cases were culled as they arose. By the end of 2005, over 3,000 cohorts had been culled in GB. Six of these cohorts tested positive for BSE.

Since the OTM rule ended, the SVS has restricted the movement of all cattle from any holdings, which might have contained cohorts of suspected BSE cases, until the suspect cohorts have been individually identified and restricted.

²⁸ Arnold and Wilesmith, Proc R Soc B, 270, 2141–2145, 2003

BSE offspring cull

The BSE offspring cull meets an essential precondition of the European Commission Decision for a Date Based Export Scheme (DBES). The Decision required that before beef exports could resume under the DBES, the UK had to slaughter all surviving offspring born after 1 August 1996 to confirmed BSE cases and the offspring of new BSE cases as these arose. In 2001, the offspring cull was introduced throughout the EU but, other than in the UK, it only applies to cattle born two years either side of the onset of disease in the dam.

There is evidence that the offspring of cows with BSE are more likely to develop the disease because of maternal transmission, but the risk is now estimated to be much lower than previously thought. The offspring cull removes animals, which might have been infected by maternal transmission.

In 2005, 429 offspring were traced, restricted and slaughtered in the GB, bringing the total slaughtered in GB since the cull began to 16,141.

Moderate risk status

Defra continued to make significant progress in its efforts to secure the lifting of the EU ban on the export of beef and cattle from the UK. Following its positive 2004 Opinion on the BSE situation in the UK, the European Food Safety Authority (EFSA) confirmed on 15 March 2005, that the UK herd could now be considered a moderate risk²⁹ for BSE. This was on the basis of updated data provided to EFSA in November 2004 and was one of the two preconditions for negotiations on lifting the export ban to commence.

The other precondition was the requirement of a satisfactory report on the UK's BSE controls by the European Commission (EC)'s FVO. Defra set up a dedicated project to oversee the development of three major information technology (IT) systems and new business processes to address the shortcomings noted in the report of the April 2004 FVO mission on BSE controls. This involved extensive co-operation between Defra, the devolved administrations, the Food Standards Agency (FSA), the Meat Hygiene Service (MHS), the SVS, local authorities, the Rural Payments Agency (including the British Cattle Movement Service), IBM (Defra's IT providers) and the wider industry. This project encompassed:

- improvements in data on cattle identification;
- BSE testing arrangements, including the fallen stock testing regime;
- the establishment of an IT supported cohort cull;
- ensuring the effectiveness of our specified risk material and feed controls.

BSE testing arrangements and a cohort cull were also essential elements of the preparations for the OTM rule change.

²⁹ The World Organisation for Animal Health (OIE) standards threshold for a country to be considered moderate risk in terms of Bovine Spongiform Encephalopathy (BSE) is set at 200 BSE scanning and targeted surveillance and confirmed cases over a 12 months period per one million adult cattle i.e. cattle aged over 24 months.

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The FVO inspected GB's enhanced procedures in June 2005 and presented a satisfactory report to the EC and other Member States on 28 September 2005, noting satisfactory progress in most areas. Consequently, the European Commissioner for Health and Consumer Protection, Markos Kyprianou stated that:

"This favourable report means that the two conditions which the European Commission set out in its TSE Road Map for discussions to begin with Member States on lifting the embargo on British beef have now been met."

Preliminary discussions on the lifting of the ban took place at EU level. The EC have indicated that they do not expect a decision to be made before March 2006 at the earliest. The UK will continue to press for as short a timescale as possible between the ending of the OTM Scheme in early 2006 and the lifting of the export ban to reduce any potential for market disruption during this transition period.

In preparation for the lifting of the export ban, Defra launched a consultation in October 2005 on the resumption of beef and cattle exports. The consultation also covered new rules on the age of vertebral column removal and use of head meat, which will apply when the export ban is lifted. Defra held discussions with both industry and animal welfare groups to ensure that the transport of cattle for export would be done to the highest standards of animal welfare and will continue to work closely with all concerned.³⁰

TSE Roadmap

EU-wide measures have been in place for several years to reduce the incidence of, and eventually eradicate, BSE and scrapie, and to reduce potential consumer exposure to BSE. These measures have resulted in a significant reduction in the incidence of BSE. The European Commission is considering whether changes to the controls might be appropriate, provided that the decline in BSE incidence continues, the changes have a sound scientific basis and consumer protection is maintained. In July 2005, the European Commission published the TSE Roadmap. This outlined the way in which TSE controls might be altered in the future, leading to the achievement of the strategic goals listed below, both in the short to medium and longer terms.

30 On 8 March 2006, the EU's Standing Committee on the Food Chain and Animal Health voted unanimously to lift the ten-year ban on the export of beef and cattle from the UK. Further details are available at:
<http://www.europa.eu.int/rapid/pressReleasesAction.do?reference=IP/06/278&type=HTML&aged=0&language=EN&guiLanguage=en>
<http://www.defra.gov.uk/news/2006/060308b.htm>

Short to medium term goals: cattle

1. To ensure and maintain the current level of consumer protection by continuing to assure the safe removal of specified risk material but to modify the list or age based on new and evolving scientific opinion.
2. A relaxation of certain measures of the current total feed ban when certain conditions are met.
3. To reduce the numbers of tests of bovine animals and at the same time continue to measure the effectiveness of the measures in place with a better targeting of the surveillance activity.
4. Simplification of the criteria for the BSE categorisation of countries and conclusion of the categorisation process for Member States and trading partners before 1 July 2007.
5. To stop the immediate culling of cohort and offspring animals after confirmation of BSE. (Such animals could instead be culled and destroyed at the end of their productive lives.)
6. To discuss the lifting of the additional restrictions on exports of beef and beef products from the UK if the pre-set conditions are met.

Short to medium term goals: sheep and goats

7. Review and relaxation of the eradication measures for small ruminants taking into account the new diagnostic tools available but ensuring the current level of consumer protection.

Long term goal

8. To modify TSE control measures in line with current technology and new evolving scientific knowledge.

The TSE Roadmap can be downloaded at

http://europa.eu.int/comm/food/food/biosafety/bse/roadmap_en.pdf

Defra and the FSA launched a joint consultation on the TSE Roadmap in July 2005, and invited comments from SEAC.

Although the Roadmap does not contain detailed proposals, Defra anticipates that discussions will eventually lead to changes in the TSE Regulation (EC) No.999/2001. Some of the possibilities mentioned, if turned into proposals, have the potential to impact upon the level of consumer protection against BSE. Defra intends to consult SEAC again, as necessary, so that UK negotiations continue to be informed by an assessment of the level of risk.

The UK Presidency of the European Council of Ministers worked closely with the European Parliament, Member States and the European Commission to take forward discussions on the TSE Roadmap to agree a common position. Discussions will continue under the Austrian Presidency in the first half of 2006. The protection of human health remains the government's priority, with controls that are soundly based on current science and which are proportionate, practicable and enforceable. As new proposals emerge from the discussion of the Roadmap, stakeholders will also be consulted again on the possible effects these may have.

Replacement of Over Thirty Month Rule

On 7 November 2005, the rule which had prevented cattle aged over 30 months from entering the human food chain since March 1996 was replaced with a permanent exclusion of cattle born before 1 August 1996 from the food and feed chains and a BSE testing regime for cattle aged over 30 months at slaughter for human consumption. The Beef Assurance Scheme ended.

The replacement of the OTM Rule followed the government's acceptance of advice from the FSA that a robust testing regime had been developed.

The replacement of the OTM Rule marked a significant step in the year-on-year decline in the BSE epidemic and represented a boost for the food industry and beef farmers who can now enter over 30 month old cattle born after July 1996 into the human food chain, subject to them testing negative for BSE.

Abattoirs wishing to slaughter these animals are required to meet strict standards endorsed by the FSA. These include a two-day assessment trial and a legally binding agreement with the MHS on operational procedures to ensure efficient testing.

The OTM Scheme, introduced in May 1996 to provide an outlet for animals, which could no longer enter the food and feed chains as a result of the OTM Rule, continued to operate throughout 2005. The Older Cattle Disposal Scheme (OCDS), an intervention scheme for cattle born or reared in the UK before 1 August 1996, will replace the OTM Scheme on 23 January 2006. OCDS will operate until 31 December 2008 with a fixed compensation rate that reduces year on year.

Consolidation of the TSE Regulations

In June 2005, Defra launched a consultation on proposed new domestic TSE Regulations which would consolidate and update the existing TSE (England) Regulations 2002. The consolidated Regulations are expected to come into force in March 2006.

Targeted surveillance for TSEs

EU Member States have been carrying out targeted surveillance for TSEs since 2001, in accordance with the requirements in the EU TSE Regulation 999/2001 (as amended).

Targeted surveillance of cattle

Cattle surveillance continued throughout 2005 and the following categories of animals were tested for BSE:

- all cattle over 30 months of age, which were slaughtered for human consumption. Prior to the lifting of the OTM Rule in November 2005, this was a small number of Beef Assurance Scheme cattle slaughtered between 30 and 42 months of age;
- all fallen stock over 24 months of age³¹;
- all emergency slaughtered cattle over 24 months of age, including those cattle identified at ante-mortem inspection at abattoirs;
- all healthy cattle slaughtered under the OTMS born after 31 July 1996;
- a random sample of 10,000 animals slaughtered under the OTMS born before 1 August 1996;
- all offspring of confirmed BSE cases, aged over 30 months and born after July 1996; and
- all birth and rearing feed cohorts of confirmed BSE cases, born after July 1996.

Brain stem samples taken from these animals were tested using EU approved rapid tests. All positive or inconclusive samples were re-tested using EU approved confirmatory tests. **Table B3.4** shows the results of this testing.

³¹ All cattle over 24 months of age which die or are killed other than for human consumption, must be notified to the TSE Surveillance Helpline for BSE testing on 0800 525 890.

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Table B3.4: Results from targeted surveillance for BSE in cattle in Great Britain during 2005

Survey Category	Number Tested	Number BSE Negative	Number BSE Positive
Fallen Stock >24 months	89,303	89,264	39
Emergency Slaughter >30 months (OTMS)	138,773	138,669	104
Ante-Mortem Inspection >30 months (OTMS)	17,792	17,784	8
Healthy Slaughtered >30 months born after July 1996 (OTMS)	268,125	268,123	2
Healthy Slaughtered >30 months born before August 1996 (OTMS)	10,045	10,040	5
Beef Assurance Scheme >30 <42 months (Fresh Meat)	58	58	0
Emergency Slaughter >24 months (Fresh Meat)	486	486	0
Ante-Mortem Inspection >24 months (Fresh Meat)	747	747	0
Healthy Slaughtered >30 months (Fresh Meat)	18,832	18,832	0
BSE Offspring	166	166	0
BSE Cohorts	3,039	3,033	6
Total for cattle born in 1996/97 cohort	60,847	60,845	2
Total for other cattle	486,519	486,357	162
Total for all cattle tested in 2005	547,366	547,202	164

Targeted surveillance of sheep and goats

Sheep and goat surveillance continued throughout 2005 and the following categories of animals were tested for scrapie:

- a random selection of 10,000 sheep aged over 18 months, and slaughtered for human consumption (sheep abattoir survey);
- a random selection of 10,000 fallen sheep aged over 18 months and notified voluntarily (sheep fallen stock survey);
- a random selection of 1,000 fallen goats aged over 18 months and notified voluntarily. In April 2005 notification became compulsory³² and all such animals are tested (goat fallen stock survey); and
- all goats aged over 18 months, and slaughtered for human consumption (goat abattoir survey).³³

Table B3.5 shows the results of this testing.

³² All goats over 18 months of age which die or are killed other than for human consumption, must be notified to the TSE Surveillance Helpline for TSE testing (Tel. 0800 525 890).

³³ Member States may substitute up to 50% of their quota for goats slaughtered for human consumption with additional fallen goats. The UK took advantage of this provision by reducing the human consumption target by 20% and increasing the fallen stock target accordingly.

Table B3.5: Results from targeted surveillance for TSE in sheep and goats in Great Britain during 2005

Survey Category	Number Tested	Number Negative	Number Classical Scrapie Positive	Number Atypical Scrapie Positive
Sheep Abattoir Survey	11,106	11,078	12	16
Sheep Fallen Stock Survey	8,271	8,239	26	6
Goat Abattoir Survey	1,282	1,282	0	0
Goat Fallen Stock Survey	1,329	1,325	4	0
Total Sheep	19,377	19,317	38	22
Total Goats	2,611	2,607	4	0

Scrapie

In 2005, the reporting rate for suspect cases of scrapie was comparable to that in 2004. However, the number of animals slaughtered as clinical suspects reduced from about 90% to 70% of those reported. The number of slaughtered sheep confirmed with scrapie reduced from about 80% to 60%.

In the last quarter of 2005, the VLA reported that it had detected atypical scrapie in three sheep submitted as clinical scrapie suspects. Changes in locomotion and behaviour were identified but there was a lack of pruritus³⁴ in all three cases.

All samples from sheep and goats, which tested positive for scrapie, were subjected to further discriminatory testing to determine the presence or absence of BSE.

Table B3.6 shows the numbers of confirmed scrapie cases in GB identified by scanning surveillance between 1993 (when it became a legal requirement to report scrapie) and 2005.

BSE in goats

In 2002 France identified laboratory results from a goat which were similar to BSE. All goats from the herd were culled and no other suspect cases were detected. Material from this suspect goat was subjected to mouse bioassay and at the beginning of 2005 the EU reported that experts had confirmed that the sample was positive for BSE. In light of this finding the EU recommended that surveillance across Europe be increased to establish whether BSE was present in the current goat population. No further suspect BSE cases in sheep or goats were reported in 2005.

In early 2005 the VLA reported that it had detected a suspect case of BSE in a Scottish goat originally confirmed as having scrapie in 1990. The VLA had reassessed the sample using immunohistochemistry (IHC) and discovered that it showed similarities to experimental BSE in goats. This sample has been subjected to mouse bioassay and the results are not due until 2007 at the earliest.

³⁴ Skin irritation manifested as scratching, rubbing and nibbling at the fleece.

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Table B3.6: Summary of scrapie cases detected by scanning surveillance in Great Britain 1993–2005

Year	Positive	Negative	Inconclusive
1993	328	163	3
1994	235	90	2
1995	254	56	1
1996	460	87	3
1997	508	83	3
1998	499	99	1
1999	598	117	2
2000	568	86	0
2001	295	57	9
2002	404	105	1
2003	378	98	0
2004	309	124	0
2005	173	169	0

UK Contingency Plan for BSE in sheep

During 2005 the FSA consulted stakeholders on their views on the Contingency Plan for the emergence of naturally occurring BSE in sheep and specifically on a number of risk management options and their proportionality. This was done through a workshop, a report of which is now on the FSA website at <http://www.foodstandards.gov.uk/aboutus/ourboard/boardmeetoccasionalpapers/bsecontingencyplan>.

The main conclusion of this workshop was that if naturally occurring BSE was identified there should be a thoughtful escalation of responses graduated on the number of BSE cases and whether the confirmed cases are indicative of a wider spread of the disease. This outcome along with suggested changes to the Plan will be presented to the FSA Board for agreement during 2006.

Food and Veterinary Office Mission on TSE controls

In October 2005, the European Commission's FVO carried out a mission to GB to evaluate the implementation of certain protective measures against TSEs in sheep and goats, as set out in Regulation (EC) No. 999/2001 as amended. The FVO concluded that there was a satisfactory level of compliance with EU requirements on control of TSE in small ruminants, although there were minor shortcomings in certain areas to be addressed.

Atypical scrapie

The targeted surveillance programme for sheep and goats which has operated since January 2002 detected a number of sheep samples which tested positive on the BioRad Enzyme-Linked Immunosorbant Assay (ELISA) screening test, but were not subsequently confirmed using either Western Blot or immunohistochemistry (IHC) tests. The samples were mostly from sheep with genotypes considered to be most resistant to scrapie.

By further optimising the IHC method, VLA scientists have since been able to confirm the presence of disease-associated prion protein in these samples. Several other European countries have also reported similar observations.

Although the VLA detected three cases of atypical scrapie in sheep through scanning surveillance, the vast majority of atypical scrapie cases continued to be detected through the targeted surveillance of sheep and goats under the abattoir and fallen stock surveys. The targeted surveillance programme was launched in 2002 and by December 2005 the VLA had detected 108 atypical cases in sheep. The genotypes of atypical cases detected through targeted surveillance between 2002 and 2005 are shown in **Table B3.7**.

The genotypes of both atypical and classical scrapie detected through the targeted surveillance between 2002 and 2005 are shown in **Table B3.8**.

Table B3.7: Genotype of atypical scrapie cases detected through targeted surveillance between 2002 and 2005

Genotype	NSP Type	2002	2003	2004	2005	Total
ARR/ARR	1	3	7	4	1	15
ARR/AHQ	2	4	11	4	10	29
ARR/ARQ		2	7	1	3	13
ARR/ARH		0	1	0	0	1
AHQ/AHQ		3	4	6	1	2
AHQ/ARH	3	0	0	1	1	2
ARQ/ARH		0	0	0	0	0
ARH/ARH		0	0	0	0	0
AHQ/ARQ		3	14	2	2	21
ARQ/ARQ		2	5	3	3	13
ARR/VRQ		4	0	0	0	0
AHQ/VRQ	5	0	0	0	0	0
ARH/VRQ		0	0	0	0	0
ARQ/VRQ		0	1	0	0	1
VRQ/VRQ		0	0	0	0	0
Total			18	52	16	22

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Table B3.8 : Genotypes of classical and atypical scrapie cases detected through targeted surveillance between 2002 and 2005

Genotype	NSP Type	Classical Scrapie	Atypical Scrapie
UNKNOWN	–	1	0
ARR/ARR	1	0	15
ARR/AHQ	2	0	29
ARR/ARQ		1	13
ARR/ARH		0	1
AHQ/AHQ	3	1	13
AHQ/ARH		0	2
ARQ/ARH		1	0
ARH/ARH		0	0
AHQ/ARQ		3	21
ARQ/ARQ		21	13
ARR/VRQ	4	31	0
AHQ/VRQ	5	0	0
ARH/VRQ		10	0
ARQ/VRQ		71	1
VRQ/VRQ		14	0
Total		154	108

Defra has initiated a case-control study, led by the VLA, to investigate these cases further. The first stage of the study was to trace the atypical cases detected at abattoirs back to the flocks of origin. The SVS had almost completed this work by the end of 2005. The VLA will invite these flocks to participate in the study. It is hoped that this epidemiological study will identify any common risk factors for the presence of atypical scrapie in a flock.

The National Scrapie Plan

The National Scrapie Plan (NSP), a joint initiative of Defra and the devolved administrations in GB, was officially launched in 2001. Its aims and objectives have wide support from within the sheep industry, and the NSP continues to be developed in partnership with key interested stakeholders. Now in its fifth year of testing, over 2.1 million sheep had been genotyped under the plan by the end of 2005. The principal objective of the plan is to reduce the risk of TSEs occurring in the national flock by reducing the number of sheep with the most susceptible genotype to classical scrapie (VRQ/VRQ) and increasing the number of sheep with the most resistant genotype to classical scrapie (ARR/ARR). As a consequence, this will reduce the theoretical risk to human health arising from the possible presence of BSE in sheep. Since the launch of the NSP, several new initiatives have been introduced. Extensive information on the plan is published at www.defra.gov.uk/nsp.

Ram Genotyping Scheme

In 2005, over 2,400 applications were received from farmers with either registered or non-registered purebred flocks. 11,096 flocks have been visited and over 331,000 samples taken. By the end of 2005, the number of participants in the Ram Genotyping Scheme had risen to 12,136.

Compulsory breeding programme

In 2004 the Department carried out a fundamental strategic review of the NSP, in light of European legislation, which requires all Member States to establish compulsory genotype-based breeding programmes for TSE resistance. Following public consultation, Rural Affairs Ministers announced in January 2005 that the future strategic direction of the NSP would take the form of a Compulsory Ram Genotyping Scheme (CRGS). During the year, Defra and the devolved administrations worked together with key stakeholder focus groups to develop detailed rules for this new scheme, and associated draft implementing legislation. The scheme will focus on the removal of the most susceptible (VRQ) ram genotypes, with participation in the scheme a legal requirement for all sheep farmers who own purebred breeding flocks and, in addition, those who produce and sell crossbred rams for breeding. All male breeding stock used in, or sold from these flocks will have to be genotyped, and those carrying the VRQ allele will be required to be slaughtered or castrated. It is estimated that this new Scheme will apply to around 32,000 flocks in GB.

Consultation on implementing a compulsory breeding programme for rare breeds of sheep

In November 2005, Defra launched a consultation on the implementation of a compulsory breeding programme for rare breeds of sheep. Commission Decision 2003/100/EC provides specific derogations that may be applied to exempt rare breeds of sheep. The consultation sought views on a number of options for applying the derogations. The consultation period ends in January 2006.

Compulsory Scrapie Flocks Scheme

The Compulsory Scrapie Flocks Scheme (CSFS), launched in 2004, implements an EU requirement. Under these measures, farmers with confirmed scrapie cases on their farms must have their sheep flocks genotyped so that the more susceptible sheep can be identified and removed. Alternatively, in exceptional circumstances, they may have their whole flock disposed of. Goats on affected holdings must be disposed of. Genotyping in goats is not an option, as goats are not known to possess scrapie resistant genes. Compensation is paid for sheep and goats culled under the measures. A review of compensation rates was carried out in autumn 2005 and revised rates will apply from March 2006.

Up to 31 December 2005 in GB, 294 flocks on 168 unique holdings had been put under compulsory scrapie control measures. The VLA also confirmed the presence of scrapie in four fallen goats (three from one herd). Both herds were placed under movement restrictions and cannot supply goats to the food chain. However, they can continue to supply milk for human consumption. Cull animals and fallen stock from these herds continue to be tested for the presence of TSEs.

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Towards the end of 2005, the European Commission initiated a review of compulsory control measures for TSEs under the TSE Road Map (see previous). Defra continues to put forward its views on the revision of compulsory scrapie control measures, to the European Commission and other Member States.

Voluntary Scrapie Flocks Scheme

The Voluntary Scrapie Flocks Scheme (VSFS), launched in April 2004, was open to all historically affected flocks – those that had a case reported and confirmed from 1998 until the date the CSFS rules were enforced in GB. Membership contracts run for up to a maximum of four years. Applications from eligible owners were accepted up until 31 March 2005.

The VSFS has been well supported by the GB sheep industry. Out of 568 eligible owners, 188 owners with 348 eligible flocks joined the scheme.

Under both the CSFS and VSFS, farmers receive free genotyping and veterinary advice on breeding for scrapie resistance, which, in the long term, aims to eradicate scrapie in the national flock.

Semen archive

Autumn 2005 saw the start of the second season of collections for this archive of semen from rams with the more scrapie susceptible genotypes. This UK-wide project will enable the re-establishment of viable breeding populations of these sheep in the future should it prove necessary. Along with research funded by Defra into scrapie genotypes and economically important breed traits it underpins the NSP strategy of breeding out the most scrapie susceptible genotypes. The National Sheep Association, the Rare Breeds Survival Trust, and the Sheep Trust support the UK Agriculture and Rural Affairs Departments to provide a strategic oversight through the Semen Archive Management Board (SAMB). By the end of 2005 almost 60 breeds had nominated donor rams and over 140,000 doses of semen had been frozen. With some breeds yet to donate and many more rams to donate from those that have, collections from rams with eligible genotypes (anything other than an NSP Type 1) will continue as planned until 2006/7.

Field capability

Currently there are 188 technical field staff trained and certified for NSP work. In addition, some 467 local veterinary inspectors (LVIs) and 46 veterinary officers (VOs) have received practical and theory training in line with NSP guidelines.

Shows and sales

GB Agriculture and Rural Affairs departments consider it important to communicate the aims and objectives of the NSP to a large audience, and consequently NSP staff were present at a total of 20 events during 2005.

TSEs in other species

TSE was detected by scanning surveillance in an Asian Leopard Cat (*Felis (Prionailurus) bengalensis euptilurus*) submitted by a zoo. The animal was born in 1993 and had historically consumed meat from fallen stock.

National Feed Audit

The National Feed Audit (NFA) monitors and enforces the feed ban – the exclusion of processed animal proteins (PAP) from farmed animal feed. The feed ban is the primary BSE eradication measure. The NFA covers the feed supply chain from production and distribution through to end-use.

In 2005, Defra established a statutory register of producers feeding fish meal-containing feeds to non-ruminants, and keeping ruminants on the same premises. This register fulfilled the requirements of the European Commission's FVO and allowed the SVS to prioritise visits to farms to ensure that satisfactory separation procedures were in place. By the end of 2005, over 500 producers had registered.

The SVS's risk-based inspection programme included inspections of a wide range of premises as shown in **Table B3.9**.

Table B3.9: National Feed Audit Inspections in Great Britain 2005

Premises Type	Number of Inspections
Importer	3
Store	12
Feed mills	515
Home mixers/mobile mixers	302
Intermediary	38
Haulier	14
Farms keeping non-ruminants	41
Farms keeping ruminants	168
Farms keeping both ruminants and non ruminants	943
Total	2,036

Table B3.10 shows the number of feed samples collected during the inspections. Feed samples are tested for prohibited animal proteins by a variety of laboratory methods including MAT (Microscopy Analysis Test), ELISA (Enzyme-Linked Immunosorbant Assay) and CIE (Counter Immuno Electrophoresis). None of the livestock feed samples tested, contained evidence of prohibited PAP of terrestrial animal origin.

Table B3.10: National Feed Audit Samples Collected in Great Britain 2005

Premises	Number of Official Samples Tested for Processed Animal Protein		
	Feed Materials	Compound Feedingstuffs	
		For Ruminants	For Non-Ruminants
At Import	314	0	0
Feed Mills	2,648	1,368	1,416
Intermediaries/Storage	247	89	9
Means of Transport	0	0	0
Home Mixers/Mobile Mixers	779	487	681
On Farm	540	1,988	1,960
Fats & Vegetable Oils	44	0	0
Sub-Totals	4,572	3,932	4,066
Grand Total	12,570		

Animal by-products

The Animal By-Products Regulation (EC) No. 1774/2002 contains the rules for the handling of animal by-products to protect public and animal health. The Regulation, which has applied across the EU from May 2003, introduced stringent conditions throughout the food and feed chains requiring safe collection, transport, storage, handling, processing, use and disposal of animal by-products. It requires premises that handle, treat or dispose of animal by-products to meet specific standards and to be approved. In 2005, the SVS completed the inspection and individual approval of approximately 2,000 plants, which initially applied for re-approval under the new Regulation.

Defra received the final report of the European Commission's FVO inspection to assess UK progress in applying the Regulation, carried out late in 2004. The issues raised have been addressed in an internal Action Plan.

A number of implementing measures were agreed in 2005, and these have been transposed into the Animal By-Products Regulations 2005, which apply to England. These new implementing measures:

- permit the use of five new methods for treating or disposing of animal by-products;
- permit the use of some category 1 and 2 material for technical purposes;
- set standards for the processing of fish waste;
- introduce a model commercial document for intra-community trade; and
- apply controls on milk, which is to be fed to livestock.

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Additional implementing measures that were agreed in 2005 and will come into effect in 2006 are:

- the disposal rules on former foodstuffs of animal origin;
- the simplification of rules on alternative disposal routes such as biodiesel; and
- the rules on organic fertilisers and soil improvers, manure and composting and biogas.

In October 2005, the European Commission submitted a report to the European Council of Ministers and the European Parliament on the implementation of the Animal By-Products Regulation by Member States and possible changes to address problems identified in practice. The report was considered in Council Working Groups of technical experts under the UK Presidency of the Council and was broadly welcomed and endorsed by Member States. The European Commission plan an extensive consultation procedure in the first half of 2006 on proposed changes with a view to coming forward with a co-decision proposal in late 2006 or early 2007.

National Fallen Stock Scheme

The National Fallen Stock Scheme has been running since November 2004. The government established the Scheme in partnership with industry, with the aim of assisting farmers in their compliance with the EU Animal By-Products Regulation by reducing the cost to farmers of disposing of their fallen stock. By the end of 2005, the Scheme had 34,000 members and had made 200,000 fallen stock collections. The Scheme has generally been successful, despite some initial problems and localised collection difficulties during the lambing season. At the end of 2005, Defra commissioned an independent review of the Scheme and is expecting a report in Spring 2006. The National Fallen Stock Company will continue to work with local and national farming organisations and the fallen stock collection industry to provide an improved nationwide service in 2006. Further information about the Scheme can be found at www.nationalfallenstock.co.uk.

B4: Zoonoses and protection of the food chain

Close collaboration continued through working in partnership with those involved in the management of the risk to public and animal health posed by zoonoses (those diseases and infections which can spread naturally between animals and people). In 2005, increasing effort was directed towards fulfilling the requirements of the EC legislation on zoonoses, EC Directive No 2003/99, and EC Regulation No 2160/2003 which deal with the monitoring of trends and sources of zoonotic agents and managing the risks. Support and assistance was given to those involved in managing the risks to public health through collaboration in the assessment of potential new threats from zoonotic agents or undefined agents. Assistance was also provided to other authorities in protecting the food chain from chemical contaminants on farms, and monitoring to help ensure that residues from the necessary use of veterinary medicinal products to protect animal health and welfare do not enter the food chain.

UK Zoonoses Group

The United Kingdom (UK) Zoonoses Group (UKZG) met twice during 2005, in June and November. The UKZG brings together those in government with an interest and role in the assessment and management of the risks from zoonoses and zoonotic agents. It is chaired by the Chief Medical Officers for the UK and has a joint Department of Health and Defra secretariat.

The group took a keen interest in the arrangements in place for handling an outbreak of avian influenza and were updated at both meetings on a range of issues, but particularly on the arrangements to protect those coming into contact with infected birds should the disease arrive in the UK. The group was also informed of the finding of avian influenza in a bird quarantine unit in England and the collaboration between the veterinary and public health authorities.

UKZG was informed that a sub-group of the Defra Antimicrobial Resistance Coordination Group (DARC) had been formed to consider the possible risks of Meticillin-Resistant *Staphylococcus aureus* (MRSA) in animals. With regard to the companion animal sector a partnership approach was developed to assess and manage risks with representative organisations taking the lead and Defra providing a facilitatory role. The UKZG supported this approach. For further information see

www.defra.gov.uk/animalh/diseases/zoonoses/mrsa.htm

UKZG was informed of the first isolation of extended-spectrum beta-lactamase (ESBL) antimicrobial resistance in *Escherichia coli* (*E coli*) in GB in food production animals. The isolation was made by the VLA from calves with scour (diarrhoea) on a farm in Wales in Autumn 2004. The source of the ESBL *E. coli* was not determined.³⁵ It was noted that

³⁵ As part of the risk management the initial findings were reported in the Veterinary Record on 05 February 2005 in a Veterinary Laboratory Agency /Health Protection Agency joint publication

the ESBL E. coli identified was unrelated to the predominant types circulating among the human population in the UK. Further investigations have been carried out and information may be found at: www.defra.gov.uk/animalh/diseases/zoonoses/esbl.htm and in published literature.³⁶

Antimicrobial resistance remains high on the list of issues that concern those working in the fields of public health and clinical microbiology. During the year a contribution was made to the Health Protection Agency report 'Trends in antimicrobial resistance in England and Wales'.³⁷ Results of testing zoonotic bacterial isolates and indicator organisms from animals for antimicrobial resistance during 2004 were published in the report on trends and sources of Zoonoses and zoonotic agents in animals, feed, food and man.³⁸ Results of testing *Salmonella* isolates for antimicrobial resistance were published in the booklet 'Salmonella in Livestock Production in GB 2004'.³⁹

Other topics considered by the UKZG during the year included West Nile Virus, Brucellosis investigations in cattle, and a report of an increase in hydatid disease in dogs in Wales which was highlighted in a letter to the veterinary profession.⁴⁰ Further information on the work of the UKZG is given at

www.defra.gov.uk/animalh/diseases/zoonoses/ukzg/minutes.htm

Zoonoses

The work of the Human Animal Infections and Risks Surveillance Group continued to develop during 2005 and met monthly under the chairmanship of the Health Protection Agency (HPA). The Group, set up in 2004, is a multi-agency and cross-disciplinary horizon-scanning group with members from the HPA, Defra, the VLA, and the Department of Health (DH), and is chaired by the HPA's Department of Emerging Infections and Zoonoses (EIZ) at the Centre for Infections (CFI). The Chair of the National Expert Panel on New and Emerging Infections (NEPNEI), representatives from National Public Health Service for Wales, Health Protection Scotland, and the Food Standards Agency (FSA) also attend. The group acts as a forum to identify and discuss infections with potential for interspecies transfer (particularly zoonotic infections). Reports from the Group are sent to members of UKZG and of NEPNEI. Further information on the group is available at

http://www.hpa.org.uk/infections/topics_az/emerging_infections/HAIRS.htm

No new zoonoses were identified in 2005. Support was given to a joint poster on the work of the group at the Zoonoses Conference in Liverpool in 2005, and the work of the group was also featured in a joint publication of the British Medical Journal and the Veterinary Record.⁴¹

³⁶ CJ Teale, L Barker, AP Foster, E Liebana, M Batchelor, DM Livermore and EJ Threlfall Extended-spectrum beta-lactamase detected in E coli recovered from calves in Wales Vet Rec., Feb 2005; 156: 186–187

³⁷ http://www.hpa.org.uk/infections/topics_az/antimicrobial_resistance/AMR_Rep_2001_03.pdf

³⁸ <http://www.defra.gov.uk/animalh/diseases/zoonoses/trends-sources.htm>

³⁹ <http://www.defra.gov.uk/corporate/vla/science/science-salm-intro.htm>

⁴⁰ Gareth T. Edwards, Tom M. Walters, Christianne Glossop Welsh Assembly Government Inter-Species Infection Group, Re-emerging risk of hydatid disease in Wales Vet Rec., Dec 2005; 157: 782

⁴¹ A. L. Walsh and D. Morgan, Identifying hazards, assessing the risks Vet Rec., Nov 2005; 157: 684

The Zoonoses Report UK 2004 was published in November following collaboration with the DH, the veterinary and public health authorities in the devolved administrations, and the FSA. The report is aimed at all those with an interest in the management of the risks from zoonoses and zoonotic agents, and also at the general reader seeking information. The report may be viewed at

www.defra.gov.uk/animalh/diseases/zoonoses/reports.htm

Work continued in relation to the new legislation on zoonoses following Directive 2003/99/EC on the monitoring of zoonoses and zoonotic agents, and Regulation (EC) No 2160/2003 on the control of *Salmonella* and other specified foodborne zoonotic agents. The report on the trends and sources of zoonotic agents in the UK in 2004 in animals, feed, food and man was submitted to the Commission for analysis by the European Food Safety Authority (EFSA).⁴² This was the first year that the information was submitted using a web-based reporting system.

During the year the Community target for the reduction of *Salmonella* Enteritidis, *Salmonella* Hadar, *Salmonella* Infantis, *Salmonella* Typhimurium and *Salmonella* Virchow in breeding flocks of *Gallus gallus* was agreed as a reduction of the maximum percentage of adult breeding flocks comprising at least 250 birds remaining positive to 1% or less by 31 December 2009.

Regulation (EC) No 1005/2005

A meeting was held with major partner interests in July 2005 and a way forward agreed to work together to implement the requirements of the regulation. A number of working groups were set up to work in collaboration to conduct surveys to establish the prevalence of *Salmonella* in poultry and pigs, to develop national control plans to achieve the targets set for reduction of *Salmonella* under Regulation (EC) No 2160/2003, and to act as a source of knowledge and expertise. Working groups were established to take forward the work on breeding flocks of *Gallus gallus*, layer flocks producing eggs for human consumption, chickens reared for meat, turkeys and pigs.

The 12 month study of holdings containing flocks laying eggs for human consumption to establish a baseline *Salmonella* prevalence as required by Decision (EC) No 2004/665 was completed in collaboration with the devolved administrations in September 2005 with over 436 holdings visited in the UK. The visits in GB were carried out by the SVS and these samples were analysed for the presence of *Salmonella* by the national reference laboratory for *Salmonella* at VLA Weybridge. The raw data was submitted to the Commission Services in October for analysis by EFSA. Additional information on farm management practices and facilities was collected when farms were visited to take samples. Analysis of this epidemiological data may help to identify risk factors on holdings where *Salmonella* has been identified.

⁴² The report is available at <http://www.defra.gov.uk/animalh/diseases/zoonoses/trends-sources.htm>

During the year, Decision (EC) No 2005/636 concerning a baseline survey on the prevalence of *Salmonella* spp. in broiler flocks of *Gallus gallus* was published. Meetings of the working group on chickens reared for meat were held and the study started in October 2005. In collaboration with devolved administrations 375 holdings in the UK are required to be sampled to establish the baseline prevalence of *Salmonella*. The samples from GB will be taken by the SVS and analysed at the national reference laboratories. The study will run for 12 months.

Defra officials participated in a number of meetings with EFSA⁴³ and the Commission Services to take forward the enhancement of monitoring of Zoonoses and zoonotic agents in animals, feed and food required under Directive (EC) No 2003/99.

Defra is taking an active role in monitoring the levels of resistance found in bacteria in livestock as part of its surveillance activities. Ongoing surveillance of resistance patterns has been identified as an important element within the Defra action plan to combat antimicrobial resistance.

Salmonella in poultry and current control programmes

The statutory monitoring of breeding flocks of domestic fowl for *S. Enteritidis* and *S. Typhimurium* continued during 2005, in line with the requirements of Directive 92/117 EC.

No *S. Enteritidis* or *S. Typhimurium* infection was confirmed in any breeding flock of domestic fowl. *S. Typhimurium* was suspected in one breeding parent meat production flock, but was not confirmed following official investigation.

The continued low levels of these two *Salmonella* serotypes in the breeding sector are illustrated in **Figures B4.1** and **B4.2**.

S. Enteritidis was isolated from chicks at a hatchery. The chicks were hatched from eggs produced by a layer breeder flock in another Member State and the veterinary authorities of the country concerned were informed of the circumstances.

All laboratories finding *salmonella* in samples from livestock, their environment and in animal feed, are required to report the results to a government official under the Zoonoses Order 1989. These results for GB are collated and analysed each year and are published in '*Salmonella* in livestock production in Great Britain' and at <http://www.defra.gov.uk/corporate/vla/science/science-salm-intro.htm>. The report for 2005 will be available in the latter half of 2006. These reports provide a good picture of serotypes which are commonly found in samples from livestock taken for a variety of reasons.

As a result of industry monitoring for *Salmonella* in chickens reared for meat, usually at three to four weeks of age, four *S. Enteritidis* incidents were recorded (there was one incident in 2004), and six *S. Typhimurium* incidents (two in 2004). The most common *Salmonella* serotype reported in chickens reared for meat, or their environment, was *S. Livingstone*, accounting for over 27% of reports, similar to 2004.

⁴³ Details of EFSA meetings are published on the EFSA website at <http://www.efsa.eu.int/>

Section B – Chapter B4

Figure B4.1: Reported incidents of suspected *S. Enteritidis* and *S. Typhimurium* in broiler breeders 1989–2005

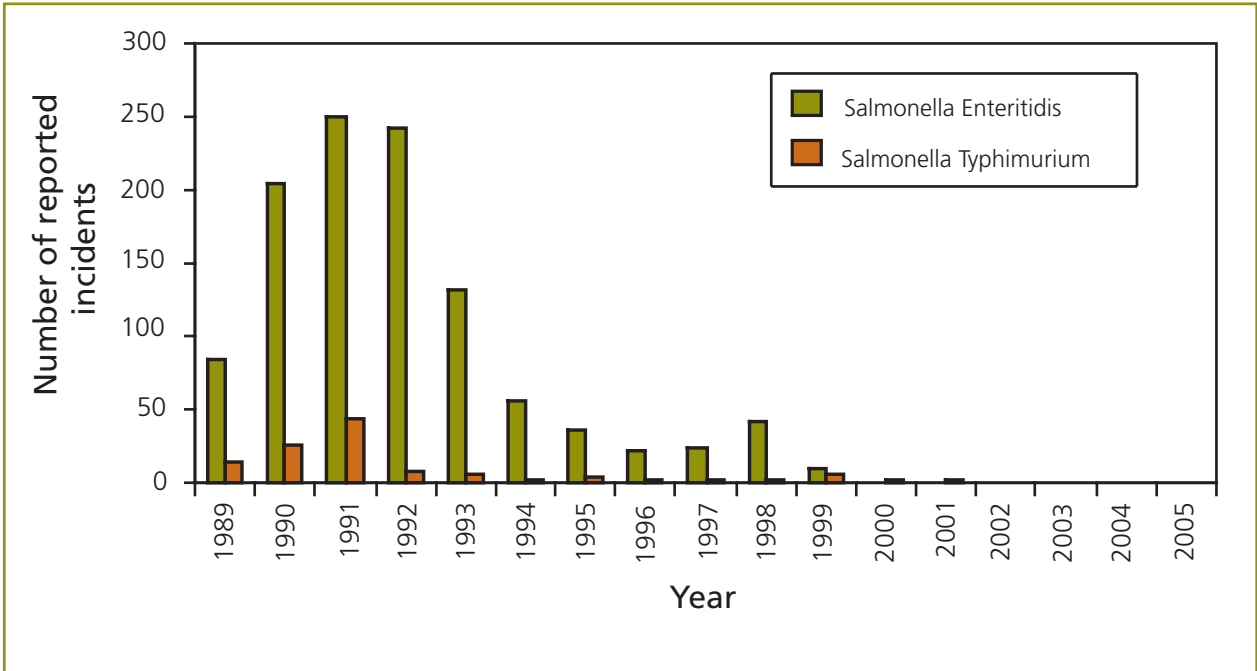


Figure B4.2: Reported incidents of suspected *S. Enteritidis* and *S. Typhimurium* in Layer Breeders 1989–2005

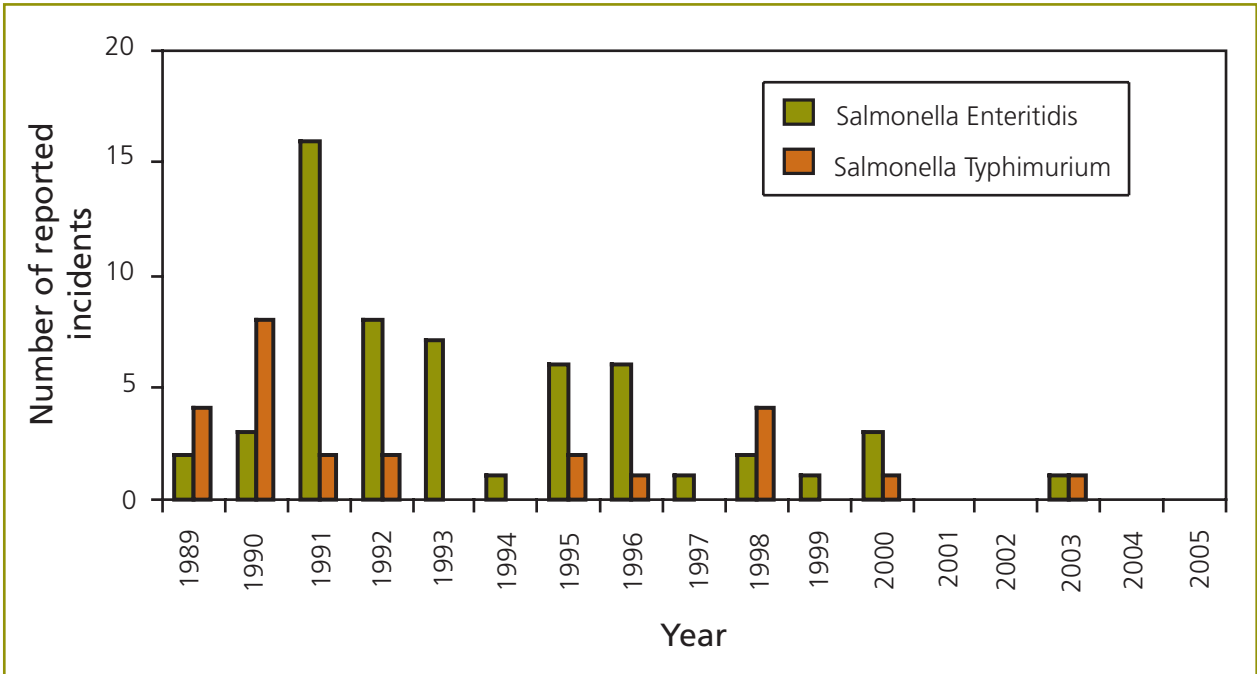
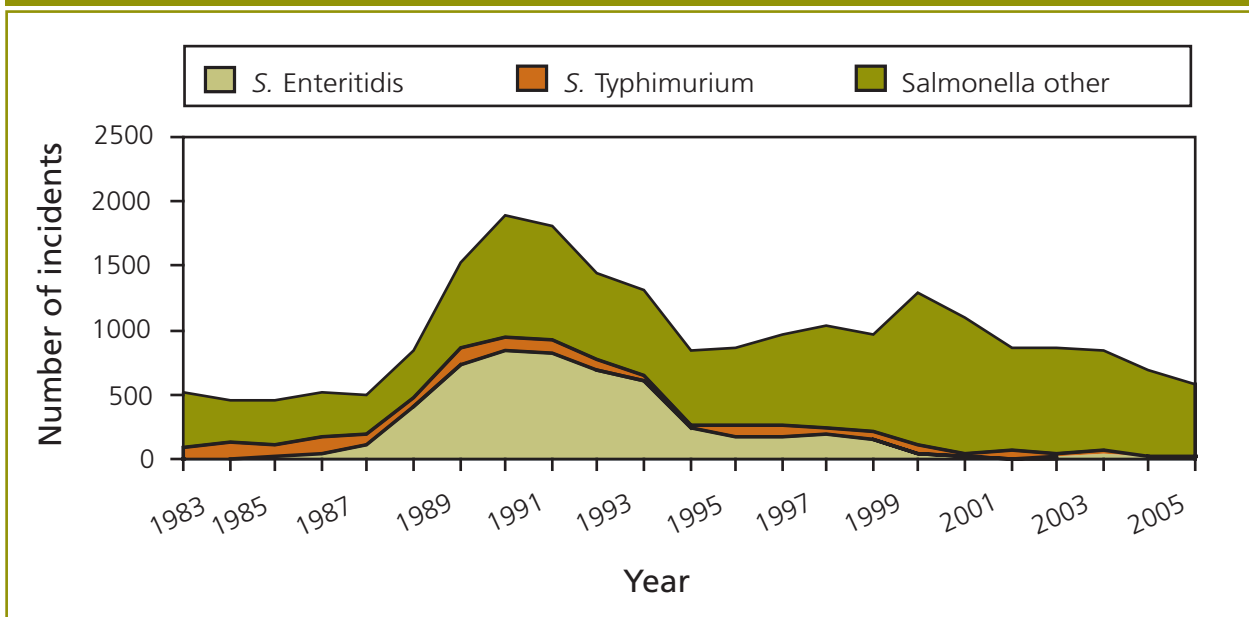


Figure B4.3: Reported incidents of *Salmonella* serotypes in domestic fowl in GB 1983–2005



In commercial layer flocks producing eggs for human consumption, 14 incidents of *S. Enteritidis* were recorded, and three of *S. Typhimurium*. Where possible follow up visits were made to the farms and advice given on the control of *salmonella*.

The reports of *Salmonella* serotypes which are not *S. Enteritidis* or *S. Typhimurium* have remained similar in 2005 to previous years as illustrated in **Figure B4.3**. The overall number of reports decreased in chickens to 566 in 2005 (675 in 2004). During 2005, *S. Gallinarum* was isolated on one holding from hens producing eggs for human consumption. *S. Gallinarum* is not considered to have zoonotic potential, but despite veterinary treatment, considerable losses were noted in the flock. An investigation was carried out to attempt to determine the source of the infection and these studies are ongoing. *S. Gallinarum* is considered to be absent or present only at very low levels in poultry generally, and has not been recorded in GB since the 1980s. Advice was given to the operator in collaboration with the veterinarian and a programme initiated to eliminate the infection. This included enhanced biosecurity measures, continued monitoring and vaccination. The finding was reported in the veterinary press⁴⁴ to alert the poultry industry veterinarians to consider the organism in differential diagnoses of disease. Later in the year another incident of *S. Gallinarum* was reported in a small backyard hobby flock in another part of the country. Investigation did not identify the origin of this infection but there was no evidence of any connection with the other flock.

Salmonella in cattle

As reported in previous years the most commonly reported *Salmonella* serotype in cattle was *S. Dublin* accounting for 70% of the 763 reports. *S. Typhimurium* was the second most commonly reported with 118 incidents (15% of total and similar number to 2004).

⁴⁴ S. P. Cobb, C. M. McVicar, R. H. Davies, and H. Ainsworth Fowl typhoid in caged layer birds Vet Rec., Aug 2005; 157: 268.

Salmonella in pigs

S. Typhimurium continued to be the most common serotype reported in pigs with 119 incidents (68% of reports which was similar to 2004). Altogether there were 173 incidents reported in pigs (an increase in the number of reports compared with the 152 reports in 2004), and as in 2004, *S. Derby* was the second most commonly reported. The most commonly reported phage type of *S. Typhimurium* in 2005 was U288 continuing the situation seen since 2002. Defra continued to support the Zoonoses Action Plan of the Meat and Livestock Commission with research and advice to farmers with a problem herd.

Salmonella in sheep

For a number of years *S. Enterica* subspecies *diarizonae* (serovar 61:k:1,5,7) has been the most common *Salmonella* isolated from sheep, usually associated with abortions. In 2004 it accounted for 134 of the 249 reports in sheep, and in 2005 this trend was continued accounting for 144 of the 219 reports.

Risk management of *Salmonella* in livestock

In addition to the measures taken for the control of *Salmonella* in the poultry breeding sector, on-farm visits are undertaken in collaboration with the owner's veterinary surgeon. Advice is given to the producers on measures which could be taken to reduce *Salmonella*. In 2005, 184 advisory visits were made, an increase on the 164 visits carried out in 2004.

Salmonella in feedingstuffs

During 2005 the Advisory Committee on Animal Feedingstuffs (ACAF) published a 'Review of Feed Law Enforcement'. The review encompassed the whole system of enforcing feed law and standards, including inspections, penalties and audit arrangements. The Committee made a total of twelve recommendations. The full review can be viewed at: <http://www.food.gov.uk/science/ouradvisors/animalfeedingstuffs/pressreleases/acaffeedlawenfpr>

The Committee considered various other issues during the year including:

- the manipulation of animal feed to enhance the nutritional value of food;
- residues of feed additives in poultry products;
- microbiological risks to feed;
- withdrawal of antibiotic growth promoters; and
- genetic modification (GM) issues.

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ACAF advises the FSA, the Secretary of State for Environment, Food and Rural Affairs, Ministers of the Scottish Executive and the National Assembly for Wales, and the Minister for Agriculture and Rural Development Northern Ireland on the safety and use of animal feeds and feeding practices. Particular emphasis is placed on protecting human health with reference to new technical developments. In carrying out its functions, the Committee liaises with other relevant advisory committees as appropriate.

Table B4.1: The levels of *S. Enteritidis* (S.E) and *S. Typhimurium* (S.T) in finished feedingstuffs and materials in Great Britain 2001–2005

Type of material	2001		2002		2003		2004		2005	
	S E	S T	S E	S T	S E	S T	S E	S T	S E	S T
Finished Feeds	2	4	0	1	1	2	1	4	0	3
Animal Protein	1	0	0	0	0	0	0	1	0	0
Vegetable Material	0	3	0	5	0	4	0	5	0	2
Minerals	0	0	0	0	0	0	0	0	0	0
Miscellaneous	0	2	0	0	2	8	0	15	2	13
Total	3	9	0	6	3	14	1	25	2	18

Table B4.2: The levels of *Salmonella* in feedingstuffs and materials in Great Britain during 2005 from data supplied by authorised laboratories

Product	Number of Tests			Number of positive tests			% of tests positive		
	2003	2004	2005	2003	2004	2005	2003	2004	2005
Processed animal protein at GB protein premises	3,752	3,576	4,896	21	32	116	0.6	0.9	3.2
GB and imported processed animal protein arriving for feedingstuffs use	878	1,153	803	23	36	28	2.6	3.1	2.4
Linseed meal, rapeseed meal, soyabean meal and sunflower meal at a GB crushing premises and other tests on oilseed meals and products for feeding stuff use	12,475	10,364	8,776	376	337	185	3	3.3	1.8
Non-oilseed meal vegetable products	9,954	8,845	7,839	97	35	106	1	0.4	1.2
Pig and poultry meals	4,171	3,069	2,639	33	25	32	0.8	0.8	1.0
Poultry extrusions	4,346	5,299	4,236	21	12	15	0.5	0.2	0.3
Pig extrusions	1,411	1,591	1,325	13	9	5	0.9	0.6	0.3
Ruminant concentrates	1,859	1,982	1,959	6	5	6	0.3	0.3	0.3
Protein concentrates	724	511	340	6	6	8	0.8	1.2	1.6
Minerals/others	643	380	358	1	0	1	0.2	0.0	0.3

Chemical food safety

The VLA is contracted to the FSA to provide assistance and advice in dealing with on-farm chemical food safety incidents. This is to protect the food chain in England and Wales. During the year a total of 83 chemical food safety incidents were investigated. As in previous years, the majority of these were cases of lead poisoning, but again the increase in the number of botulism cases in cattle was maintained. Investigations were also carried out into three incidents of botulism in sheep, a condition that is rarely reported. All three outbreaks were associated with poultry litter.

Further information on chemical food safety incidents is available in the reports at <http://www.defra.gov.uk/corporate/vla/science/science-foodsafe-chem-report.htm>

Assistance to Health Authorities

Defra provided assistance when requested to Health Authorities investigating outbreaks of zoonotic pathogens in humans. This assistance is normally requested when a food source involved in an outbreak has been linked to a particular farm, or there is illness in people who have visited the same farm and there is suspicion that the infection was acquired there. The investigation and sampling of animals on the farm may be of value to the Public Health Authorities in confirming that the source of the outbreak has been identified.

A total of nine visits were made during 2005 to eight specific farms at the request of the public health authorities to investigate if there was any possible link to outbreaks of human VTEC O157. Five of the visits were made to four open farms (with one of the farms receiving two visits, the second one as a follow up sampling visit). The other four visits were made to commercial farms. On two of the eight farms a high prevalence of VTEC O157 was noted in sheep. Comparisons of the isolates with the human strains is ongoing, but so far in four cases the provisional results indicate the organism isolated from animals is indistinguishable from the organism isolated in the related human outbreak.

Assistance was also given on two occasions following outbreaks of Cryptosporidiosis in people who had visited open farms.

Residue surveillance

The VMD operated two surveillance programmes for residues of veterinary medicines in animals and animal products. The statutory programme, which implements European legislation, covers home production from primary points, including abattoirs. The non-statutory programme looks for residues primarily in imported meat, fish and honey. Summary results of the VMD's surveillance in 2005 were published in the VMD's quarterly newsletter, which is available on the VMD's website. Officers from the SVS collected samples on farms for the 2005 statutory programme, undertook follow-up investigations at farms where positive residues had occurred and checked on farm medicine records. Advice was provided to farmers on how further residues could be avoided.

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The Independent Veterinary Residues Committee (VRC), which advises the Veterinary Medicines Directorate (VMD) on the operation of its surveillance programmes, publishes an annual report which includes a summary of the annual results of the VMD's two surveillance schemes.⁴⁵

Horse passports

The Horse Passports system is established with over 688,000 new passports being issued by the end of 2005. Over the year, initial perception about passports from the equine sector changed and by the end of 2005, there was a significant and growing recognition of the benefits of horse passports.



SVS vet checking horse identification and branding with passport.

New draft EU Regulations on the identification of equidae

The European Commission is currently discussing repealing Commission Decision 93/623/EEC and 2000/68/EC on the identification of equidae and replacing it with consolidated legislation. The Commission is expected to propose that all newborn foals should be micro-chipped, but the Commission are also looking at alternative means of identifying animals. The proposal will not be retrospective. The target date for the changes is currently 1 January 2007, but this is likely to be delayed. We are waiting for a further draft of the proposals from the Commission.

The National Equine Database

The National Equine Database (NED) has been established and it is estimated that it will become fully operational in the autumn of 2006. The NED is being jointly developed by Defra and the UK equine industry. It will be used by the government to help implement the horse passports requirements, for disease control and to help establish a strategy for the horse and its role in the rural economy and community. It will be used by the industry as a basis for a system to improve the breeding and performance of horses.

⁴⁵ Annual reports can be viewed at VRC's website at www.vet-residues-committee.gov.uk.

Equine welfare

Equine Industry Guidelines: Compendium for Horses, Ponies and Donkeys (2nd Edition) was published on 1 December 2005. The Compendium has been produced to promote welfare and good management practice. Its aim is to assist horse owners, keepers and others to achieve high standards in animals welfare. It also highlights the various legal requirements related to keeping horses.

Equine Health and Welfare Strategy

A number of responses were received to the consultation on the draft Health and Welfare Strategy for the Horse, Pony and Donkey, now referred to as the Equine Health and Welfare Strategy. We have analysed the responses, and these are being used to produce a revised draft. The British Horse Industry Confederation has agreed to lead on the development and delivery of the Strategy, supported by Defra and the National Equine Welfare Council. The aim is to launch the Strategy at the British Equine Veterinary Association National Conference in September 2006. The key themes of the strategy are likely revolve around promoting education and training, particularly for potential owners and keepers; better disease prevention and control; and raising awareness of individual roles and responsibilities.

Section C: Animal disease prevention and control

C1: Emergency preparedness

In July 2005, Defra's exotic disease Contingency Plan was invoked for the first time since 2001 to respond to an outbreak of Newcastle Disease (ND) in pheasants. Concerns about avian influenza, the risk to human health and particularly the case of avian influenza in a captive bird in quarantine premises, focused attention and effort on the government's preparedness and ability to respond.

Separately, progress has been made in developing the contingency plans for additional exotic diseases and for reviewing and updating veterinary and administrative instructions and forms in line with new legislation to enable effective implementation of policies in the field.

Contingency plans

In July 2005, the first Exotic Animal Disease Generic Contingency Plan was laid before Parliament. It sets out the structures and systems that will be implemented in any outbreak of exotic animal disease and includes disease specific annexes explaining the requirements for dealing with foot and mouth disease (FMD), avian influenza and ND, and classical swine fever (CSF). It builds on the previous separate plans and provides a summary of the disease control policies that would be implemented in an outbreak. The avian influenza annex was further amended in December 2005 to reflect the changes in disease control policy decided in the EU as a result of concerns about the spread of avian influenza. At the same time the generic part of the plan was amended to clarify the alert status and its relationship to levels of suspicion of disease. The plan can be found at <http://www.defra.gov.uk/footandmouth/pdf/genericcp.pdf>

Further work has also taken place on the rabies contingency plan and the development of a plan for exotic horse diseases. Overall, good progress is being made towards the development of comprehensive contingency plans for those exotic diseases where GB is most at risk.

Outbreak of Newcastle Disease

The outbreak of ND in pheasants in Surrey in July was the first confirmed case of exotic animal disease since FMD in 2001. The clinical signs of disease were first observed on the affected premises on 30 June 2005. It was confined to a single holding and was dealt with quickly. Effective liaison with the French authorities enabled tracings to be dealt with rapidly.

The outbreak provided the opportunity to test the Contingency Plan and all elements of Defra's exotic disease contingency plan were engaged. The National Disease Control Centre in London and a Local Disease Control Centre at Reigate were established, and the organisation and systems outlined in the plan put in place.

Overall the plan proved its value. Eradication of the disease was achieved rapidly with a policy of culling, movement controls, vigilant surveillance and cleansing and disinfection within the infected area. Ten thousand pheasants were culled and over 20 other premises were inspected and sampled. No further cases were detected. Tracings and epidemiological investigations identified that the infected pens had been stocked with birds imported from France. It is expected that disease free status will be regained in January 2006, six months after the final cull of birds on the infected premises was completed.

There were, however, some areas where lessons were identified, in particular the difference in scale between this outbreak and FMD demonstrated the importance of plans being scaleable and flexible, but also the great demands on human resources that even the smallest outbreak brings. Lessons learned have been reported and are available on the Defra website, and some have already been implemented in the revision of the generic Contingency Plan.

Avian influenza – Exercise Hawthorn

In 2005, work began to plan and develop a national avian influenza exercise to take place in April 2006. A wide range of players, including other government departments, operational partners and the industry that will be involved have been engaged. The aim of the exercise is to review, check and update the Government's current contingency plans for a national outbreak of avian influenza and thereby establish the current state of readiness. It will also identify improvements in the plans, instructions, structures and procedures employed in managing an outbreak. It follows on from Exercise Hornbeam – the FMD exercise held in 2004, and builds on the exercises held regularly in the Animal Health Divisional Offices of the SVS to test the operational instructions and field delivery of disease control measures.

More information on avian influenza can be found in **Chapter B1** of this report.

Information is also available on the Defra website at <http://www.defra.gov.uk/animalh/diseases/notifiable/disease/ai/index.htm>

C2: Exotic diseases

The CVO (UK) has a responsibility to control incursions of diseases that are usually exotic to GB. Early detection is essential for effective control and rapid elimination of these diseases to ensure a minimal impact on animal health and welfare, public health, rural communities and trade. This is achieved by working partnerships with the SVS, VLA, Institute of Animal Health (IAH) and the devolved administrations. These partnerships have a broad remit driven by Defra to confirm and maintain GB's disease free status.

Defra also funds scientific research of global significance to:

- *provide sound evidence for disease control policy;*
- *improve diagnostic tools for disease;*
- *develop novel disease control methods; and*
- *recognise current and emerging disease threats to the UK.*

Diseases of poultry

The spread of avian influenza from south east Asia and an outbreak of Newcastle Disease (ND) heightened awareness of avian notifiable diseases within GB. Paramyxovirus virus in pigeons continues to occur sporadically.

Investigations

In GB there were 79 investigations of suspected avian influenza or ND cases that resulted in one confirmed case of ND in July 2005 (see below). There were 31 isolations of paramyxovirus in pigeons or doves throughout the year.

Newcastle Disease

For information on the Newcastle Disease outbreak in Surrey in July 2005, see **Chapter C1** of this report.

Avian influenza

For information on avian influenza, see **Chapter B1** of this report.

Diseases of ruminants and pigs

Foot And Mouth Disease

Investigations

There were 14 investigations into suspect vesicular disease conditions in 2005, all proved negative.

The role of the Institute for Animal Health, Pirbright

The IAH, Pirbright acts as the UK National Reference Laboratory on behalf of Defra for the major exotic, epizootic, viral diseases of livestock, including FMD, rinderpest, bluetongue and others previously on the OIE List A. In addition, the laboratory is recognised as an international reference laboratory by the Food and Agriculture Organisation (FAO), OIE and the EU for a number of these diseases. In this capacity, the laboratory conducts a programme of global surveillance and offers a diagnostic service free of charge for those countries not able to diagnose these diseases, and to confirm and refine the diagnosis for those that can. This activity provides an early warning system for Defra of any new or emerging threats from exotic diseases of livestock. The laboratory also conducts a programme of basic, applied and strategic research to improve our knowledge base on these diseases, to develop new diagnostic tools and to ensure that policy decisions are based on sound science. Basic research into the fundamental molecular biology, immunology and pathogenesis of the viruses concerned leads to a rational approach to developing improved vaccines and diagnostics.

Together with the Department for Trade and Industry and the Biotechnology and Biological Sciences Research Council, Defra is contributing to an ambitious programme to redevelop the Pirbright Laboratory and to co-locate onto the Pirbright site the Virology Department of the VLA from its current site at Weybridge. This programme will deliver an international centre of excellence in veterinary virology housing an unrivalled range of reference laboratories for virus diseases of livestock. The critical mass formed in this way will improve efficiency of operation and sustainability for both IAH and VLA, and will ensure that we are well placed to meet the threat of exotic disease for the foreseeable future.

The work of the International Reference Laboratory

The International Reference Laboratory has continued to monitor worldwide patterns of virus circulation and evolution, receiving and characterising approximately 400 samples from 23 countries and providing recommendations on vaccine selection. Efforts have been made to improve collaboration with other laboratories, especially in Africa and Asia. With the help of the OIE and the FAO, a network has been established to coordinate effort and integrate outputs of international and national reference laboratories. The network secretariat has been established at Pirbright. Collaborative molecular studies have cast light on the possible origins of the Foot and Mouth Disease Virus (FMDV) responsible for a major epidemic in 2005, involving the spread of the Asia 1 serotype across China and into Eastern Russia.

Vaccine antigen reserves

Vaccines of two FMDV serotypes formulated from antigens stored in the UK National Reserve were potency tested in cattle according to the method specified in the European Pharmacopoeia. Both vaccines passed the test with potency values in excess of the required level (>6 PD50).

The 2001 outbreak

Diagnostic samples and results from the 2001 FMD outbreak have been retrospectively analysed. During the outbreak, the time taken to issue final diagnostic results based on use of ELISA and virus isolation ranged from a few hours to several days. Retrospective analysis of samples by real-time Polymerase Chain Reaction (RT-PCR) has demonstrated the utility of this method, giving broadly similar but faster results than was obtained in 2001.

Diagnostic developments

Early diagnosis of FMD is paramount, and simplicity is required if a test is to be deployed in the field. A prototype one-step, reverse transcription loop mediated amplification (RT-LAMP) assay has been developed. It enables FMDV to be detected in under an hour in a single tube without thermal cycling. Further work will be required to optimise, validate and apply the method.

In collaboration with a consortium of European FMD scientists, serological tests have been validated to substantiate freedom from infection with FMDV after an outbreak has been controlled with the aid of cattle vaccination. Analysis of the sensitivity and specificity of the available tests has enabled conclusions to be reached on the overall confidence with which freedom from infection can be substantiated. The main difficulty is to reach an adequate level of confidence in herds of less than 50 cattle.

Pathogenesis and persistence

Our understanding of the mechanisms by which FMDV infects cells continues to improve. FMDV can use a number of different cell surface integrin molecules as receptors to initiate infection of its host cell. We have identified these molecules to elucidate the mechanisms of infection and tissue targeting of the virus. Of considerable importance in the control of FMD is the occurrence of carrier animals in some ruminants and the risk that they may present in transmitting the disease. Understanding how the virus survives at sites of persistence should help to develop vaccination and antiviral strategies to prevent the carrier state. Laser Micro Dissection (LMD) techniques of cells with RT-PCR have allowed us to identify immune cells which have a role in clearance of persistence of FMDV infection. In collaboration with the Royal Veterinary College, studies in sheep have demonstrated for the first time that FMDV is able to cause transplacental infection and foetal death.

Airborne spread

During the year, a number of experiments were conducted by an IAH/UK Met Office/ Manchester University team to help characterise the size, quantity and time of release of FMD aerosol emitted by pigs, sheep and cattle infected with the virus responsible for the 2001 FMD outbreak. This information is required for input into atmospheric dispersion models used to estimate airborne spread of disease. In addition, experiments were also conducted to determine the minimum quantity of airborne virus required to infect sheep.

Section C – Chapter C2

An operational exercise/FMD model intercomparison was undertaken involving staff from the Met Office's Emergency Response Centre and Atmospheric Dispersion Group, Danish Meteorological Institute, RisØ Research Institute in Denmark, the Danish Institute for Food and Veterinary Research and Defra. Five models were compared and eighteen recommendations for future work were identified. This paves the way for future collaborative studies which, should ensure that Defra have ready access to the most appropriate decision making tools for assessing airborne spread of FMD.

The cost benefit analysis of FMD controls

Following the outbreak of FMD in 2001, the 'Lessons to be Learned' Inquiry recommended that the cost benefit analyses of FMD control strategies should be updated and maintained. In its formal Response to the Inquiries, the government accepted the recommendation and agreed to undertake such an analysis for the UK. Independent risk analysts have been commissioned by Defra to carry out a cost benefit analysis (CBA) in support of this commitment.

The objective of the CBA is to provide epidemiological and economic information on the impact of a number of broad control strategies that could be adopted in the event of an outbreak of FMD.

In addition to the CBA, Defra has commissioned a decision support tool that could be used by their staff to provide a training aid for use during exercises, and to inform decisions in the event of an actual outbreak. The full report is available at <http://www.defra.gov.uk/animalh/diseases/fmd/pdf/costben.pdf>

Disease of sheep and goats

The main diseases of concern include Bluetongue (BT), Brucellosis/Contagious epididymitis (*B.melitensis* and *B.ovis*), Contagious agalactia (*Mycoplasma* spp) and Contagious Caprine Pleuropneumonia. Some of these diseases are investigated due to pre-export laboratory testing where a suspicious result has been obtained or very occasionally, where disease is suspected clinically.

Investigations and disease monitoring

During 2005 there was one investigation into *Brucella ovis* following pre-export testing which proved to be negative after repeat sampling and clinical investigation. There were also two inquiries into suspect BT virus (BTV) both which proved negative.

The Annual Sheep and Goat survey continues to monitor for Brucellosis and Mycoplasma (Contagious agalactia) disease for intra community trade.

Freedom from brucellosis in sheep and goats, caused by *Brucella melitensis*, is monitored in accordance with requirements of Council Directive 91/68 EC. Up to the end of December 2005, approximately 15,000 randomly selected animals had been tested using the Complement Fixation Test (CFT). All were clear tests.

Additional testing for brucellosis is carried out in accordance with International Trade regulations. Tests for *Brucella ovis* were carried out on 424 serum samples from sheep and goats. Eighty alpacas/llamas and 85 deer were also tested, all of which passed serological tests.

Bluetongue

Bluetongue risk

Broad scale Europe-wide models of BTV and the major vector *Culicoides imicola* presence/absence, in relation to climate surfaces have been constructed. These indicate that the current distribution limits of BTV in central and southern Europe is strongly related to climate, particularly the amount and seasonality of precipitation and to temperature. The data showed that an extension of the climatic envelope of BTV occurred in, and after the late 1990s, probably due to the involvement of new vector species of *Culicoides* responding to climate-change. Since these new vectors (*C. obsoletus* and *C. pulicaris* groups) inhabit cooler and moister environments than *C. imicola*, the envelope of BTV transmission in Europe now extends into habitats where annual temperatures are as low as 10°C and precipitation levels never drop below 120 mm a month. It is also the case that some of the environmental space in which BTV transmission occurs in non-*imicola* areas of mainland Europe now shows substantial overlap with areas in GB. There are environments in GB that are similar to areas where BTV transmission has occurred in mainland Europe.

Potential vectors

In 2005 a survey for the *Culicoides* vectors of BTV was initiated across the whole of England and Wales and confirmed that potential vectors of the *C. obsoletus* and *C. pulicaris* groups are virtually ubiquitous. Seasonal trapping to monitor abundance and population profiles of the potential vectors throughout the year has commenced.

Vaccines

In relation to control, it has now been shown that live attenuated bluetongue vaccine viruses can cause mild to moderate clinical signs of BTV in some European breeds of sheep. These vaccine viruses are able to cause a viraemia in sheep that lasts for up to 17 days and is of sufficient titre to easily infect vector midges. It has also been shown that vector midges can then transmit these viruses. These laboratory findings have been confirmed overseas where BTV-2 vaccine virus has been shown to be circulating among unvaccinated cattle. These findings require careful consideration before such vaccines are used in the field.

The first commercially available inactivated vaccines (against BTV serotypes 2 and 4) have been developed as a result of an EU-funded international project led by IAH Pirbright, and should be on the market during 2006. Further work on developing and enhancing more advanced inactivated and sub-unit vaccines is due to commence in early 2006. This work should result in the provision of safer and more effective vaccines.

BTV prevalence in Europe

During 2005 BTV activity in Europe was reported, until October and November in Portugal (BTV-4), Spain (BTV-2 and 4) and Italy (BTV-2, 4, 9 and 16). In Spain activity involved provinces in Andalucia (4), Castilla la Mancha (2), Castilla y Leon (2), Extremadura (2) and Madrid (1), while in Italy it involved 10 provinces: (Lazio [BTV-2, 9], Liguria [BTV-16], Marche [BTV-16], Molise [BTV-2, 9], Campania [BTV-2, 9], Puglia [BTV-2, 9, 16], Basilicata [BTV-2, 4, 16], Calabria [BTV-2, 16], Sicily [BTV-2, 4, 16] and Sardinia [BTV-2, 4, 16]).

BTV Expert Group

A group of experts consisting of veterinary scientists, entomologists, epidemiologists and policy makers meet regularly to maintain and share up to date knowledge of this disease.

Sheep and goat pox

During 2005 training on sheep and goat pox pathology, epidemiology, diagnosis and control was conducted on behalf of Defra as part of an Exotic Virus Diseases Course.

Testing of suspect samples was carried out on behalf of several countries in Europe, Africa, the Middle East and SE Asia, using virus isolation, PCR, virus neutralization and serum neutralization assays. The presence of sheep and goat pox was confirmed in Vietnam for the first time and a Defra team visited the country on behalf of OIE to conduct training courses at the National Centre for Veterinary Diagnostics, Hanoi and to provide vital reagents. A training manual was prepared and provided to the National Centre.

The team also provided significant input for the proposed new Camel pox chapter in the OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals.

Lumpy skin disease

During 2005 training on lumpy skin disease (LSD) pathology, epidemiology, diagnosis and control was conducted on behalf of Defra as part of an Exotic Virus Diseases Course.

Testing of suspect samples was carried out on behalf of several African countries, using virus isolation, PCR, virus neutralization and serum neutralization assays.

Defra members of staff also provided input for the proposed new LSD chapter in the OIE Manual.

Diseases of pigs

Classical Swine Fever and African Swine Fever

There were eight investigations into suspect Classical Swine Fever (CSF) during 2005. Six of these were as a result of suspicion during post mortem inspection at an abattoir or necropsy at a veterinary investigation centre. One investigation was a consultation with a private veterinary surgeon who suspected CSF in a live group of pigs. Another investigation was instigated as a result of suspect disease during an ante mortem inspection at an abattoir. In all cases disease was ruled out.

Research and development projects

During 2005 an African Swine Fever (ASF) pathogen-based programme of work has been set up at IAH, Pirbright, integrating work carried out in the fields of Microbiology, Immunology and Epidemiology. The ASF Reference Laboratory has maintained and improved its diagnostic potential through the development of a new antigen detection ELISA as well as through work aimed at the development of lateral flow technology for the 'pen-side' diagnosis of ASF Virus (ASFV). Through its contingency plan it maintains the ability to respond to an ASF outbreak.

The ASF research carried out at Pirbright is mainly focused on the characterisation and identification of protective immunity to ASF and on the development of an efficient, effective, safe ASF vaccine. This research is supported by both Defra and the Wellcome Trust through the 'Animal Health in the Developing World' Initiative: African swine fever virus: Development of vaccines and epidemiological investigations. This Wellcome Trust funded project is a collaborative project involving nine institutes across Europe and Africa. Two vaccine development approaches which include the production of attenuated and subunit vaccines are being developed and also extensive epidemiological investigations are being carried out in four African countries.

Other research projects currently funded at IAH Pirbright by the Biological Sciences Research Council (BBSRC) are looking at virus and host genes regulating macrophage transcriptional responses following infection with ASF virus and the role of the ASF virus CD2v protein in immune evasion.

Swine Vesicular Disease investigations

For information please refer to FMD investigations.

Aujeszky's Disease

The National Slaughterhouse Serum survey for Aujeszky's disease has been operating since 1991 to demonstrate the continuing freedom from Aujeszky disease in GB. The last outbreak of the disease in GB was in 1989.

Brucellosis

Pig herds in GB have remained free from *Brucella suis* infection. Herds which show clinical signs which could be caused by *B. suis*, are investigated; samples are taken for culture and serum for antibody testing. During the year, 38 samples were tested, there were no cases of disease caused by *B. suis*. In addition, wild hares which are submitted to the VLA regional laboratories as part of the wildlife disease surveillance programme, are screened for *B. suis*. Fifteen hares were examined and all tested negative for *B. suis*.

Diseases of cattle

Brucellosis

Great Britain has remained an Officially Brucellosis Free (OBF) Region of the EU since 1991, the most recent confirmed case of brucellosis in GB was in 2004. The national brucellosis surveillance programme has continued throughout GB, with monthly bulk milk ELISA testing of all dairy herds and blood testing of beef breeding herds every two years. Reporting of all abortions and premature calvings is required, with abortion investigations carried out for all reported abortions in beef herds and on the basis of a risk assessment in dairy herds.

Post calving blood tests are carried out on cattle imported from non-OBF countries following their first calving in GB. This is facilitated by the use of the British Cattle Movement System (BCMS) to notify Divisional Veterinary Managers (DVMs), each week of imported cattle which have calved for the first time in GB, or of imported female cattle which require breeding history checks. Breeding history checks are carried out on imported heifers which reach three years of age without a recorded calving and on adult females which do not have a recorded calving within 12 months of import.

During the year 16,862 (100%) dairy herds were bulk milk tested and 30,485 (57%) beef breeding herds were blood tested. A total of 20 reactor cattle from 16 separate herds were slaughtered; post mortem samples from these serological reactors were all culture negative for *Brucella abortus*. In addition, 7,968 bovine abortion investigations were carried out; all were negative for brucellosis.

Post import tests for brucellosis were carried out on 3,462 cattle which were imported from non-OBF countries; one heifer which had been imported from the Republic of Ireland was seropositive and was slaughtered; post mortem culture tests were negative for *B. abortus*. Post calving check tests were carried out on 4,491 imported cattle, all were clear tests.

Brucellosis research

Through their COST⁴⁶ Action activities, the VLA collaborated in ring trials with other EU laboratories for all diagnostic methods (microbiological, serological, and molecular) to achieve harmonisation of methods detecting *Brucella* infection. A VNTR⁴⁷ workshop is being organised with the view to promoting a standardised approach to this typing method, enabling global sharing of data created by this technique. The VLA served as acting chair for this COST action for part of the year and had a significant role in the organisation of a large meeting on brucellosis in small ruminants.

The *Brucella* VNTR method which was developed at the VLA Weybridge, has been demonstrated to provide excellent resolution. Certain markers are best suited to identify isolates, providing a molecular equivalent to biotyping, while others can provide a signature profile facilitating traceback studies. Ongoing collaborative work with colleagues in Northern Ireland has highlighted the potential value of this technique as a molecular epidemiological tool.

A multiplex SNP⁴⁸ which can rapidly identify isolates as members of one of the currently recognised *Brucella* species, has been developed. This offers a significant improvement over other commonly used molecular tests, which cannot distinguish all species and biovars. The technique is being improved to enable deeper level typing to the biovar level and below.

Contagious Bovine Pleuropneumonia (CBPP)

There were no suspected cases of this disease in the UK during 2005.

Enzootic Bovine Leukosis

Great Britain is an Officially Enzootic Bovine Leukosis (EBL) Free region of the EU, the most recent confirmed case of EBL in GB was in 1996.

The national EBL surveillance programme has continued. Dairy herds are tested by the bulk milk ELISA, an average of 20% of herds are tested each year and each selected herd is tested twice during the year. Beef breeding herds are blood tested, an average of 25% of herds are tested each year. All slaughtered cattle are inspected, tumour lesions which could be caused by EBL virus must be reported and if EBL cannot be ruled out, samples are collected and tested.

During the year 1,759 (10%) dairy herds were bulk milk tested and 21,968 (41%) beef breeding herds were blood tested; there were no seropositive cattle. Bovine tumour samples were submitted for examination on 88 occasions, all were negative for EBL.

⁴⁶ COST – Committee of Senior Officials for Scientific and Technical Research.

⁴⁷ VNTR – Variable Number Tandem Repeats – a precise method of typing isolates by identifying specific gene sequences.

⁴⁸ SNP – Single Nucleotide Polymorphism – a method of identifying isolates by comparing characteristic gene sequences.

Diseases of horses

Industry and government worked closely in partnership to provide good notification and control of equine notifiable diseases. This has resulted in the development of a national contingency plan. The diseases of most significance are Equine Viral Arteritis (EVA), West Nile Virus (WNV) and Contagious Equine Metritis Organism (CEMO).

Investigations

There were three investigations into equine notifiable disease, two concerning CEMO and one into WNV. CEMO was confirmed by VLA but the infection was clinically inapparent and no other horses were infected. The other two investigations were negative.

The Specified Type Equine Exotic Diseases (STEED) contingency plan and West Nile Virus

The STEED plan was drafted to provide a strategy for the response to confirmed or suspect cases of equine encephalitides (including WNV and other zoonotic diseases) and other new and emerging diseases such as Borna and Hendra Viruses.

The plan outlines the national, tactical and operational levels of Defra's response and follows the requirements of all Defra's contingency plans.

The plan was put out to public consultation in August 2005 and responses were received by December 2005. A redrafted plan in light of the responses received will be issued in 2006. No cases of WNV have ever been confirmed in the UK. The VLA undertakes continued surveillance for WNV during the vector season and this surveillance was expanded in the latter part of 2005 to also include a wider surveillance capability needed for an increasing threat of avian influenza.

Defra Wildlife Disease Surveillance reports, including WNV in corvid birds and insect vectors are available at: <http://www.defra.gov.uk/corporate/vla/science/science-end-ann-wild-disrep.htm>

Exercise Ibis

The Health Protection Agency (HPA) as part of its Department of Health (DH) funded national exercise programme ran an exercise in Berkshire in March 2005. Exercise Ibis was a Health-led multi-agency training and development exercise utilising a 'table top' format. It was planned in close association with Defra. The Exercise provided the opportunity for health professionals from both human and animal disciplines to practice and develop, in a multi-agency context, the wider public health response and management of an incident of WNV.

WNV is one of a range of emerging infections. Exploring the management of an outbreak of this kind informed existing plans and strengthened links with partner organisations. The principles of dealing with such an incident are applicable to any zoonotic disease requiring a multi-agency response at local, regional and national levels.

The exercise was a collaboration between Defra, SVS, DH, HPA and many local operational partners and took a stepped approach from initial detection in horses through to the response to confirmed and suspect cases in humans.

The exercise confirmed the need for the early establishment at local level of a multidisciplinary Incident Control Team which would allow easy coordination of the operational response. This has been incorporated into the STEED plan.

Contagious Equine Metritis Organism

On 30th March 2005 a single non-thoroughbred stallion tested positive for CEMO after routine pre-breeding swabs were taken as per the Industry Code of Practice for CEMO.

The stallion had been imported into GB in October 2005, from Switzerland after a period of time in Germany. It was immediately put under restrictions allowed by the Infectious Diseases of Horses Order 1987. The subsequent investigation revealed that the infected stallion had never been used for breeding purposes in GB until the time of the detection. The horse underwent an immediate course of treatment, and mares known to have had any contact with the stallion were also investigated. All the latter were found to be negative on testing, and the stallion also tested negative on three sets of post-treatment swabs, each taken at least seven days apart. No other cases of CEMO were detected in the remainder of 2005.

The industry Code of Practice continues to be the first line of management for CEMO and EVA within the UK. This Code is produced by the Horserace Betting Levy Board (HBLB) and it continues to be revised and updated in the light of new research and the experiences of dealing with CEMO in the rest of Europe.⁴⁹ Swabs are either submitted to HBLB approved laboratories or to the VLA. The majority of swabs sent to the VLA are to comply with international trade requirements and over 6,600 were submitted for that purpose. This is an increase on the 2004 figure by over 1,000 swabs.

The novel PCR for CEMO developed by VLA Biotechnology and Laboratory Testing Departments is undergoing a process of validation. This test should enable the detection of the organism even when non-viable organisms are present and is of use to confirm isolations and to assist with the testing of tracings animals.

⁴⁹ www.hblb.org.uk

Equine Viral Arteritis

GB remained free of Equine Viral Arteritis (EVA) in 2005.

The HBLB Code of Practice for EVA is the primary means of detecting any evidence of exposure to the virus, and the Equine Viral Arteritis Order 1995 is the means of enforcing measures to restrict spread of the virus.

Blood samples are submitted for EVA serology and seropositives are notified to Defra as is the requirement of the EVA Order 1995. These notifications are investigated as to their vaccination status, sex and recent mating history. Information is then entered onto a database maintained by Defra.

Seropositive stallions without a proven vaccination history are placed under statutory restrictions. If the stallion is not subsequently gelded (castrated), then semen samples are taken to look for the presence of virus. If the test produces a positive result, the stallion remains under restrictions until either it has been certified as gelded, or it has a test mating with two seronegative mares supervised by a Veterinary Surgeon, with no subsequent seroconversion.

The VLA undertook more than 4,600 EVA serology tests in 2005, of which 2,800 were tested as part of export requirements. A single tube RT-PCR test to allow in sequencing of new virus isolates continues to be validated. This will greatly aid future testing regimes when available. Currently VLA Weybridge is participating in international ring trials with several other non GB laboratories, aimed at harmonising a single tube RT-PCR.

Diseases of companion animals

Rabies

Pet Travel Scheme (PETS) and the EU Regulation

PETS was launched in 2000. At its inception, the scheme allowed dogs and cats which met certain conditions to enter GB without the need for quarantine. EU Regulation 998/2003, which lays down the animal health requirements for the movement of dogs, cats and ferrets travelling within the EU, and into the EU from third countries, has applied since July 2004.

A derogation in the Regulation allows the UK to retain, for a period of five years, its requirements for animals to be blood tested and to be treated for ticks and tapeworms before entry to the UK. By February 2007, these requirements will have been reviewed by the European Commission on the basis of experience and scientific risk assessment, and the five year period may be extended.

All rabies-susceptible mammals entering GB are required to be licensed into quarantine for six months, unless arriving under PETS and complying with all the conditions of the European Regulation 998/2003 (as amended) on the non-commercial movement of pet animals and related national legislation.

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The SVS, on behalf of Defra, is responsible for authorising quarantine premises in England and Wales for dogs, cats and all other rabies-susceptible mammals. SEERAD licenses these establishments in Scotland. These include zoos, research establishments and quarantine kennels and catteries. The current authorised premises in England, Scotland and Wales include 34 premises for dogs, cats and pet mammals and 106 zoos and research establishments.

Table C.1: Number of dogs and cats entering quarantine 2000–2005

2000	2001	2002	2003	2004	2005	Total
5,296	5,304	3,555	4,405	3,514	3,337	25,411

Since the introduction of PETS, the demand for quarantine has declined and the number of quarantine premises for dogs and cats has reduced from 66 in 2000 to the current 34. The number of illegally landed animals in GB has increased from 151 in 2004 to 472 in 2005. Over 300 of these had no documentation of any sort to enter GB. The rest failed their PETS check and had to enter quarantine until all conditions of PETS were met.

Over 280,000 animals (248,730 dogs, 31,698 cats and 49 ferrets) have successfully entered GB under the scheme since it began.

Table C2.2: Number of animals entering the UK under PETS from 28 February 2000 to 31 December 2005

2000*	2001	2002	2003	2004	2005	Total
14,584	26,720	40,741	54,905	70,229	73,298	280,477

*10 months only

PETS checks

In 2005, 3,880 animals presented for checking under PETS failed the initial entry check at the port of embarkation (for ferry and rail companies) or at the Animal Reception Centres at approved GB airports (for airlines). This is a 5% failure rate for the total number of animals presented. Where checks are carried out at the point of embarkation, failures are not regarded as illegal landings. The main reason for failure was the animal not receiving tick and tapeworm treatment between 24 and 48 hours before being checked. The other common reason for failure was incomplete documentation.

PETS information

Information on the EU Regulation and the species of pets that it covers, the qualifying countries and the rules for bringing pets to GB are available on the Defra website at www.defra.gov.uk/animalh/quarantine/index.htm

Dog and Cat Travel and Risk Information (DACTARI)

Recent years have seen a large increase in the number of dogs and cats entering or re-entering GB, mainly as a consequence of the Pet Travel Scheme. While abroad these animals are at risk from a number of exotic diseases, some of which are zoonoses. Zoonoses are diseases and infections which can spread naturally between animals and people. In order to establish whether these diseases pose a threat, the DACTARI scheme was set up in March 2003. The scheme covers not only dogs and cats brought into or returning to GB but also those which were born and lived here without ever having gone abroad. Diseases of concern include leishmaniasis, babesiosis, ehrlichiosis and dirofilariasis (heartworm). None of which are notifiable.

DACTARI was established with the help of the British Veterinary Association (BVA) and the British Small Animal Veterinary Association (BSAVA). It is a voluntary reporting scheme for use by private veterinary surgeons in GB.

Information on the scheme has been widely distributed to private veterinarians, pet owners and others by means of PETS leaflets, publications and Defra's website.

Findings

From 1 January 2003 to 31 Dec 2005, 47 cases of diseased dogs were reported to Defra. There were no reports for cats. **Table C2.3** presents them by disease and county. The majority of these cases (38 out of 47) have been dogs resident in England at the time of their examination by a veterinary practitioner (mostly in the South East). Animals reported appear to be mainly GB resident animals.

A large majority of cases (33 out of 47) are animals which have entered or re-entered the GB via the Pet Travel Scheme. Only two cases have never left the country; in one of them, disease has been traced back to a blood transfusion from an infected donor. This information is displayed in **Table C2.4**.

The most commonly reported disease is leishmaniasis (20 confirmed and four suspect cases), followed by babesiosis (13 confirmed), ehrlichiosis (11 confirmed), dirofilariasis (one confirmed), and one case of tick paralysis.

Full results, both cumulative and yearly, can be viewed at:

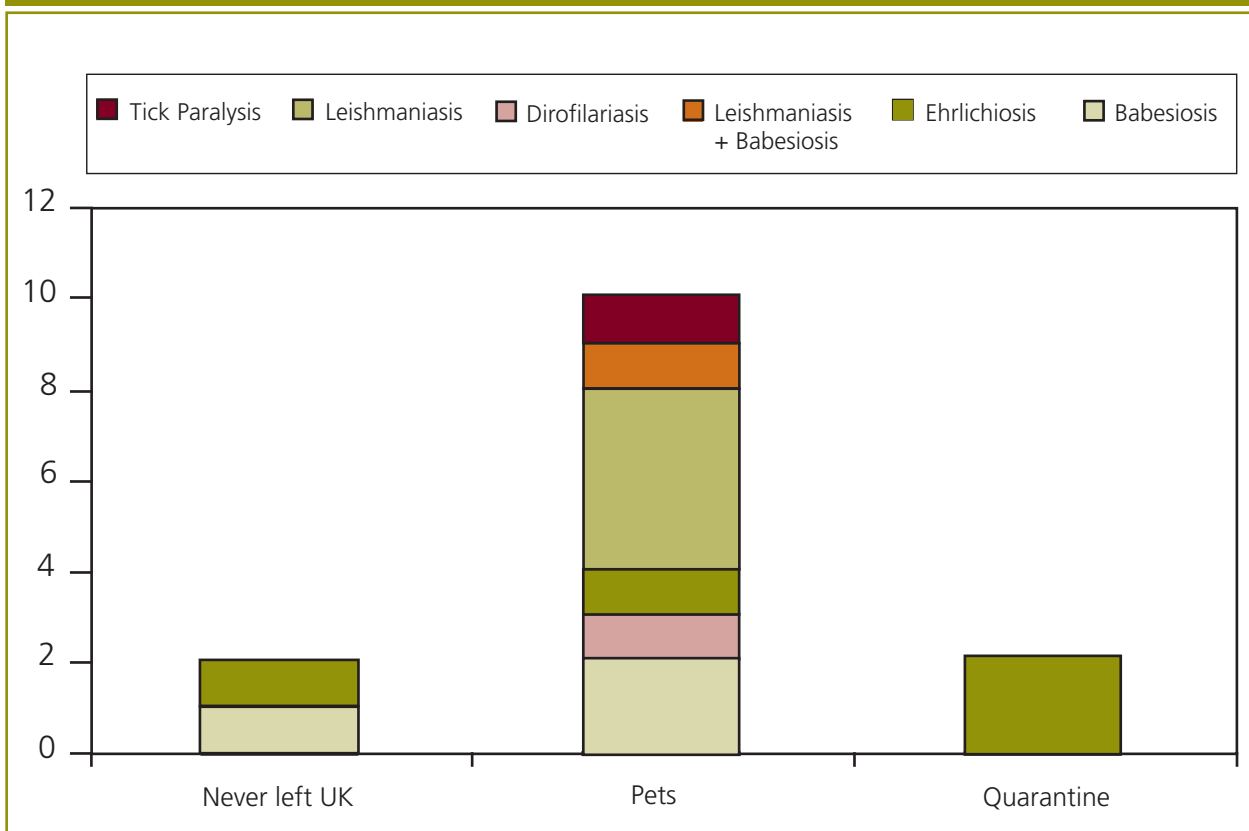
<http://www.defra.gov.uk/animalh/diseases/veterinary/dactari/index.htm>

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Table C2.3 DACTARI: Cases by region and county 1 January – 31 December 2005

Country	County	Disease name						
		Babesiosis	Babesiosis and Ehrlichia	Dirofilariasis	Ehrlichiosis	Leishmaniasis	Leishmaniasis and Babesiosis	Tick Paralysis
England	Bedfordshire	0	0	0	0	1	0	0
	Birmingham	0	0	0	0	1	0	0
	Bradford	0	0	0	0	1	0	0
	Buckinghamshire	2	0	0	0	0	0	0
	Cornwall	0	0	0	0	0	1	0
	Devon	0	0	0	0	3	0	0
	Doncaster	1	0	0	0	0	0	0
	East Sussex	0	0	0	0	1	0	0
	Essex	0	0	0	1	1	0	0
	Greater London Authority	2	0	0	0	0	0	0
	Hampshire	0	0	0	1	1	1	0
	Herefordshire	1	0	0	0	0	0	0
	Hertfordshire	0	0	0	0	1	0	0
	Kent	2	0	0	0	0	0	0
	Liverpool	0	0	0	1	1	0	0
	Northamptonshire	0	0	0	0	1	0	0
	North Lincolnshire	0	0	1	0	0	0	0
	North Yorkshire	0	0	0	1	0	0	1
	Oxfordshire	0	1	0	0	0	0	0
	Rotherham	0	0	0	0	1	0	0
	Warwickshire	0	0	0	2	0	0	0
	West Berkshire	0	0	0	2	1	0	0
	Wiltshire	1	0	0	1	2	0	0
Scotland	Aberdeenshire	0	0	0	1	0	0	0
	East Ayrshire	0	0	0	0	1	0	0
	Edinburgh	0	0	0	0	1	0	0
Wales	Pembrokeshire	1	0	0	0	0	0	0
England total		9	1	1	9	16	2	1
Scotland total		0	0	0	1	0	0	0
Wales total		1	0	0	0	2	0	0
GRAND TOTAL		10	1	1	10	18	2	1

Figure C2.1: DACTARI – Cases by by method of entry 2005



Review of rabies import control policy

In November 2005, Defra announced a review of its policies to prevent rabies entering GB through an imported animal. A public consultation was launched, and comments were requested by 9 February 2006.

The review aims to:

- ensure GB rabies controls relating to the import of all rabies susceptible mammals are proportionate and sustainable, bearing in mind that their primary purpose is protecting public health; and
- inform GB’s response to an EU review of some requirements of the EU pet movement regulation.

The review will assess the risk of introduction of rabies and other exotic diseases into GB under current rabies policies and under alternative policies and make appropriate recommendations. Risk assessment will form the basis for decisions on future rabies policy. The review will also be informed by the strategic direction of rabies policy outlined in Defra’s Animal Health and Welfare Strategy, other government policy guidelines, and the guidelines of international organisations such as the World Health Organisation. The recommendations of the review will be made available on the internet through Defra’s website.

Investigations

There were 28 investigations into suspect rabies in bats that had human contact and one investigation into suspect rabies in a fox during 2005. All proved negative.

Brucellosis in dogs

Dogs are serologically tested for *Brucella canis* prior to export to New Zealand and Australia. The rapid slide agglutination test is used for dogs being exported to New Zealand, 1,035 animals were tested, one of which failed. Dogs for export to Australia are tested by the Serum Agglutination Test; 1,461 dogs were tested, there were no failures.

Warble Fly

Between October 2004 and March 2005 serum samples from 202,048 animals in 6,257 herds were tested for the presence of antibodies to the cattle warble flies, *Hypoderma lineatum* and *H. bovis* according to the method described by Webster et al (1997). The testing procedure was the same as that used for previous surveys. Samples were drawn from those collected for the control of brucellosis and enzootic bovine leucosis. As the collection of samples is organized on a biannual basis, the results from samples collected during 2003/2004 and 2004/2005 surveys can be analysed together.⁵⁰ During the two testing periods no samples were confirmed to be warble fly positive. It is assumed that the number of seropositive herds directly reflects the seroprevalence of hypodermosis. The results therefore suggest that warble fly infestation is absent from or extremely rare in GB.

There was one serological positive to Warble Fly infection which was negated by clinical examination.

Rinderpest and Morbilliviruses

Europe

No rinderpest has been reported since the late 1800s and there were no suspect cases in 2005.

Peste des petits ruminants (PPR) was reported in Edirne Province in Turkey near the borders with Greece and Bulgaria in October 2004, but there have been no reports since.

Africa

The Somali ecosystem (Somalia, SE Ethiopia and NE Kenya) is thought to be the last possible remaining endemic focus of infection. There is active disease surveillance in this area organised by Pan-African Control of Epizootics (PACE) Somalia. Although rinderpest-like clinical signs have been observed, the samples submitted to the reference laboratory over the last four

⁵⁰ Webster et al, 1998

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years have been consistently RT-PCR negative. Recent sero-surveillance data has shown a reduction in the prevalence of antibodies to rinderpest in this region which may indicate the disease is no longer circulating. Only more extensive sero-surveillance will confirm the situation.

No samples have been submitted but there have been reports of PPR outbreaks in western, central and eastern Africa

Middle East and Asia

No reports of rinderpest. PPR has been diagnosed in samples from captive wildlife submitted by Saudi Arabia. PPR continues to be reported in the Middle East, Pakistan and India.

Global Rinderpest Eradication Programme

The role of IAH in the Global Rinderpest Eradication Programme can be divided into three main areas of activity:

Development of appropriate diagnostic technology

- Indirect ELISA for monitoring vaccine performance monoclonal antibody-based ELISA for improved sero-monitoring and sero-surveillance and differential diagnosis of PPR.
- Rapid pen-side test for field diagnosis of rinderpest from eye-swabs (five minutes).
- Development of **marker** rinderpest vaccine and heterologous PPR vaccine to help differentiate vaccinated from infected animals.

Technology transfer

- Establishment of Network of ELISA Laboratories in Africa, Asia and Middle East in collaboration with the Joint Division FAO/IAEA.
- Training of local scientists.
- Production of standardised diagnostic kits used in all countries and set up external quality assurance system.
- Technical back-stopping and advice to FAO, EU and international eradication programmes.

World Reference Laboratory for Morbilliviruses

- Provision of free world-wide diagnostic service.
- Molecular characterisation of rinderpest isolates.
- Relevant research into improved diagnostics and role of wild-life in the epidemiology of rinderpest.

C3: Scanning surveillance for new and emerging diseases

Scanning surveillance maintains a continuous watch over defined populations so that unexpected or unpredicted changes in the health status of that population can be detected.

New diseases or a change of prevalence of endemic disease can be detected by examination of pathological material submitted to veterinary diagnostic laboratories. This chapter provides a summary of the quarterly surveillance reports provided by the VLA and the monthly surveillance reports supplied by the Scottish Agricultural College (SAC).

An important component of the surveillance programmes is to analyse the cases for which no diagnosis was reached despite reasonable testing. This has the potential to highlight clinical syndromes or pathological findings, which may be new or emerging, and which cannot be attributed to the endemic diseases reported below. The methodology for this analysis has been developed over the last two years as part of the implementation of the Veterinary Surveillance Strategy (VSS) and has been applied to cattle and sheep diagnostic data captured by the VLA.⁵¹ This will be rolled out to other species over the next year at the VLA and discussions have begun with SAC to explore the practicality of including Scottish data in the analysis.

Cattle

29,063 diagnostic submissions were made in 2005 with a diagnostic rate of 74%. Although significant changes in disease syndromes were found comparing individual quarters, across the whole year no significant changes were seen in the profile of submissions for which no diagnosis was reached. As in previous years the majority of submissions for which no diagnosis was reached were associated with enteric or reproductive pathology.

The western side of the country, with the greater cattle population, had comparatively warm and wet weather throughout the year. Although a good year for grass growth, the quality of conserved forage was frequently compromised through rain spoilage.

The influence of the weather on cattle disease was illustrated by a notable increase in Super Foul (interdigital necrobacillosis in dairy cows). Also there was an increase in tick numbers with a concomitant increase in associated disease extending into areas where previously not recognised, for example, Babesiosis in parts of Gloucestershire and Lancashire. Factors to explain the increase in tick numbers, estimated by many in traditional areas to be in the region of 25–30% are possible climate change and environmental schemes limiting the extent of bracken control.

The economic difficulties for dairy farmers continued with milk prices at times less than 20p per litre and an average production cost of 18.3p per litre.

⁵¹ A full account of this methodology can be found at <http://vla28/reports/diagnosis%20not%20reached/default.asp>

Johne's disease

There has been a significant increase in the number of cases of Johne's disease diagnosed by positive serology results. The diagnoses made by the detection of acid-fast organisms in suitable samples (usually faeces) have not shown such a marked increase. This may reflect an increased awareness amongst farmers and veterinarians, a genuine increase in disease in infected herds or the spread of infection to previously uninfected herds. The planned survey for prevalence in dairy herds should give a better understanding of Johne's disease distribution. Veterinary Investigation Officers have made follow-up visits to some infected farms to provide advice on diagnosis and control.

Bovine Viral Diarrhoea

Although the number of diagnoses of acute Bovine Viral Diarrhoea (BVD) virus (BVDV) is very low, individual outbreaks can cause significant problems on affected farms. Animals may show signs of pyrexia, nasal discharge, scour and milk drop which may be marked.

Mucosal disease and persistent BVDV infection diagnoses were at similar levels to previous years. Although routine vaccination is increasing, testing of bought-in cows is essential to avoid introducing viraemic animals into the herd.

Type 2 BVDV rather than the predominant BVD type 1, has again been isolated on one of the two farms detected as infected in 2004. The type 2 virus has also been detected on a fifth farm in Shropshire, where an ongoing investigation and widespread sampling has taken place. Of the five farms identified as infected to date, two are dairy herds of high genetic merit and involved in embryo transfer work.

Cryptosporidia

In comparison to 2004, there has been a small but significant increase in the number of cases reported, although the overall number is not significantly higher than in the years prior to 2004.

Fasciolosis

An increased incidence of this disease has been seen over 2005 but not in comparison to prior years. This was due in part to August 2004 being exceptionally wet which will have favoured breeding of the intermediate snail host of the liver fluke. These conditions will have led to rapid development of the parasite and dispersal onto pasture previously unaffected by fluke. Untreated cattle will have harboured infection over the winter leading to an increase in chronic fasciolosis in the first half of 2005. Clinical signs include diarrhoea, ill thrift, submandibular oedema and decreased milk production. Also a modification to the diagnosis technique has increased sensitivity, which may have also contributed to increased diagnosis. In Scotland, diagnoses in cattle were slightly down from 15% (2004) to 13% (as a percentage of diagnosable submissions).

Small ruminants

In 2005, 6,856 diagnostic submissions from sheep and 545 diagnostic submissions from goats were made to the VLA.

Sheep

No diagnosis was reached for 21% of relevant submissions. There was a significant increase in the percentage of undiagnosed submissions for sheep suffering from 'systemic and miscellaneous' conditions. Further investigations revealed that this was due to an increase of this syndrome in the northern, mid-west and eastern regions. The predominant clinical sign was found dead. This category covers a wide range of diseases and the diagnoses reached remained similar to previous years. This is not thought to constitute evidence of a new or emerging disease although further monitoring of this syndrome will continue.

Finished lamb prices were lower for most of the first two quarters compared with the same period in 2004. A higher lambing percentage and improved lamb survival rates may have contributed to this. There was some recovery in June 2005 although later in the year prices again fell below 2004 figures. June 2005 census figures showed that the breeding flock in England and Wales fell by 4.8% to around 16.8 million which may reflect reduced returns as well as the impact of subsidy reforms.

Goats

Twenty-three per cent of submissions were non-diagnostic. There were no significant changes found in the endemic disease distribution for this species.

Ovine abortion

Enzootic abortion continues to be the most commonly diagnosed cause of abortion in sheep in England and Wales, while toxoplasmosis was the most common diagnosis in Scotland. The number of incidents of both these diseases increased this year but there was a significant fall in abortion caused by *Campylobacter fetus fetus*. The increase in toxoplasma abortion could be related to difficulty in supply of vaccine. A single case of Q-fever caused by *Coxiella burnetii* was diagnosed in the 2005 lambing season.

Clostridial Disease

There was a welcome decrease in the number of incidents of these diseases this year. Cases of lamb dysentery were seen in unvaccinated flocks. Pulpy kidney disease can occur in older lambs in vaccinated flocks, where colostral immunity is waning. Significant mortality occurred in one flock, where the vaccine had been administered at tugging rather than pre-lambing. This is likely to have resulted in inadequate antibody levels in colostrum rendering lambs susceptible to the disease.

Clostridial disease continues to be widely reported in goats of all ages and under all management systems sometimes with dramatic losses. The disease may result in sudden death, as a severe haemorrhagic diarrhoea or as a chronic diarrhoea with weight loss.

Parasitic Gastro-enteritis

Overall, the number of incidents of Parasitic Gastro-enteritis (PGE) was reduced in 2005 and this was particularly noticeable during the first three quarters of the year. This is likely to be due to a combination of factors including weather conditions; nine out of the previous 11 months prior to October 2005 were drier than average over England and Wales. Increased awareness of parasite control methods, through the Sustainable Control of Parasites in Sheep (SCOPS) initiative may also have contributed. The VLA issued a warning via the Veterinary Record⁵² that lambs left on pasture during the winter could have poor immunity due to reduced exposure to gastro-intestinal parasites and might be vulnerable to PGE if the weather got wetter. This was borne out in the final quarter when the number of incidents recorded was higher than the equivalent quarter in any of the previous six years.

Fasciolosis

The number of incidents of acute fasciolosis remained low and is likely to be associated with the dry weather conditions experienced in England and Wales. There was however an increase in the recorded number of incidents of chronic fasciolosis. This may in part be due to the change by the VLA to a more sensitive sedimentation test for faecal examination, which could have increased the diagnostic rate. The disease continues to be identified in areas such as the north east of England where it has traditionally been uncommon. The disease continues to be prevalent in the west of England and Wales.

Sheep Scab

Samples are submitted to the VLA for routine diagnosis as well as from flocks investigated under the Sheep Scab order 1997. There has not been a significant change in the number of incidents over the last four years. A conference on ectoparasites and their control was held as part of the SCOPS initiative. The key outcome was that there should be a move towards the eradication of sheep scab but the initiative to move forward should come from the sheep industry through the SCOPS steering group. A series of recommendations were produced and made available.⁵³

Caseous lymphadenitis

There was an increase in the number of incidents of caseous lymphadenitis. The reasons for this are unclear but could be due to increased awareness of the disease following the launch of a pilot Caseous Lymphadenitis monitoring scheme by the SACs. The scheme aims to prove that groups of tested rams have a low risk of carrying infection. In the majority of submissions *Corynebacterium pseudotuberculosis* was isolated from superficial abscesses, however in several incidents lung abscesses were also identified. In a small number of cases, the visceral form of CLA was associated with chronic ill thrift in adult sheep – a syndrome recognised in several other countries.

⁵² Veterinary Record, Nov 12 2005, page 611

⁵³ http://www.defra.gov.uk/animalh/diseases/control/parasite_control.htm

Johne's Disease in goats

The disease appears to be endemic in many large commercial units with the situation being reflected in vaccine sales. The vaccination program is apparently controlling the disease effectively.

Mastitis and milk production in goats

There has been much debate on milk quality. This is partly due to a high commensal population of non-haemolytic staphylococci causing high cell counts in goats compared to cattle. *Staphylococcus aureus* infection of bulk milk is often investigated and many incidents relate, not to udder infection but to cutaneous infection and contamination during milking.

Arthritis associated with *Streptococcus dysgalactiae*

The incidence of polyarthritis associated with *Streptococcus dysgalactiae* increased almost fourfold this year. Although lamb mortality tends to be low with this condition, morbidity rates frequently reach levels of 15% or more. Affected lambs are often left chronically lame and impossible to finish. An outbreak is not only significant in terms of animal welfare, but also represents a major economic loss to the enterprise. The epidemiology and bacteriology of this condition are poorly understood and disease may occur despite apparently rigorous hygiene management and navel dipping. In one severe outbreak the early use of ear tags was considered a possible predisposing factor, although this could not be definitively proved.

Pigs

Post-weaning Multisystemic Wasting Syndrome and Porcine Dermatitis and Nephropathy Syndrome

There was a significant decrease in the number of new Post-weaning Multisystemic Wasting Syndrome (PMWS) diagnoses which continues the trend seen in the last four years. However, PMWS continues to be a major source of economic loss in the pig industry owing to the ongoing increase in post-weaning mortality associated with endemic PMWS. In contrast, diagnoses of Porcine Dermatitis and Nephropathy Syndrome (PDNS) reached an all time high in the first quarter of 2005. This supports evidence from practitioners who reported an increase in mortality in growers and finishers associated with this condition. This mortality results in substantial financial loss, which has prompted a systematic investigation to be initiated. This is an immune-complex disease and the causes remain uncertain.

Respiratory disease

Respiratory disease continues to be an important disease syndrome often being complex and associated with multiple infections. This is causing significant mortality in finishers. PDNS, Porcine Reproductive and Respiratory Syndrome (PRRS) and Porcine coronavirus type 2 PCV-2 were not uncommon, all causing degrees of acute respiratory distress, lethargy and wasting. Concurrent bacterial infections were also diagnosed with *A.pleuropneumoniae*,

P. multocida and *Streptococcus dysgalactiae* *equisimilis* being isolated. PRRS virus (PRRSV) in conjunction with *P. multocida* was diagnosed most commonly. Mortality figures from weaning to finishing ranged from 2%–18% depending on health status and the level of control measures used.

Swine influenza

Continuing surveillance of influenza viruses in pigs was of major significance this year. No novel circulating strains have been identified although strain incidence has changed with H1N2 being prevalent early in the year and H1N1 re-emerging later. Infection remains very low with this disease accounting for only 6% of respiratory based submissions. Serological testing in respiratory disease outbreaks suggest that Swine influenza strain 195852 is still prevalent in the pig industry and that swine influenza plays a larger role than the 6% figure indicates.

Enteric diseases

Porcine spirochaetal infections continue to be major causes of enteric disease in growing and finishing pigs. It is of concern that the prevalence of swine dysentery has increased this year with breakdowns occurring in a number of herds that were previously swine dysentery free. Serological testing indicates that *Lawsonia intracellularis* is present in most herds and is commonly involved in diarrhoea outbreaks. PMWS is thought to be associated with an upsurge in enteric disease in grower pigs, through the immunosuppressive effects of the disease. *Clostridium perfringens* continues to occur sporadically, particularly in out-door units. Enhanced *Escherichia coli* surveillance by the VLA commenced in May with strain typing, to provide a baseline for comparative studies being established. *E. coli* causes significant morbidity with violent scouring. Bowel oedema following ataxia is seen with verocytotoxic serotypes and is sometimes associated with death from severe dehydration.

Poultry and gamebirds

The overall health status of poultry changed little during the year. The trend towards increasing free range production, particularly in layers, continued. The long-term gradual contraction of the turkey industry has been maintained. Endemic disease problems such as red mite in chickens remain important, as does the continued emergence of the Italy 02 strain of Infectious Bronchitis virus. As described earlier in **Chapter C1** of this report, an outbreak of ND was confirmed in pheasants.

Infectious Bronchitis virus

This virus is widespread in chickens and is associated with a range of disease problems. The Italy 02 strain of Infectious Bronchitis virus (IBV) was isolated from broiler chickens and there is serological evidence that this strain is now widespread in the GB. The VLA can now provide reagents for customers to carry out serology for this strain to assist in diagnosis. A coronavirus showing no relatedness to a panel of IBV and pheasant reference strains was isolated from a pheasant.

Enteric viruses

Enteric viruses, especially rotaviruses, were detected in chickens, turkeys and gamebirds. In chickens (broilers), the main clinical signs were poor uniformity and unevenness, and in turkeys a variety of enteric problems was described. Adenoviruses and reoviruses were also identified in broiler chickens showing poor weight gain or enteric and malabsorption problems.

Paramyxovirus

PMV-1 continues to be diagnosed sporadically in pigeons and doves. The detection of PMV-7 viruses in a consignment of racing pigeons from Kuwait was of interest. These strains are only found in Columbidae birds and are apathogenic. There are no reports of PMV-7 viruses occurring in racing pigeons in the GB previously.

Goose Parvovirus

This is a highly contagious disease of goslings and Muscovy ducklings causing a range of signs including weakness, anorexia, diarrhoea and high mortality. The disease was confirmed in 2004 following an absence of 23 years. Investigations suggested that infection may have been widely dispersed in the country via goslings. Latent infections occur resulting in vertical and horizontal transmission. Owing to the devastating effect that the disease can have on goose production, Special Treatment Authorisations were granted by the VMD for the importation and use of vaccine. A single outbreak was confirmed in 2005 causing mortality in 60 out of 200 goslings whose parent stock originated from one of the farms confirmed with goose parvovirus infection in 2004.

Marek's Disease

Marek's disease is an important disease of poultry in which virus-induced changes in the lymphocytes (white blood cells) results in the development of tumours in various internal organs. Vaccination is compromised by the evolution of the Marek's Disease virus. This disease was recorded in chickens at the highest level since 1999 and was diagnosed in both commercial and hobby/backyard flocks.

Red mite

Disease caused by red mite was diagnosed in both hobby/backyard flocks and commercial, particularly layer flocks, in which it can be a significant problem, not least on welfare grounds. Studies are being undertaken to understand red mite ecology and to identify ways in which this parasite may be better controlled.

Anaemia from red mite



Fowl typhoid

Fowl typhoid (*Salmonella Gallinarum* disease) was diagnosed as the cause of high mortality in a commercial layer flock, for the first time in Britain since 1986. *S Gallinarum* is not considered to be a zoonotic organism.

Histomoniasis (Blackhead)

Histomoniasis was recorded in both chickens and turkeys, although fewer cases were identified in both species than last year. An outbreak of this disease was reported in a 10,000-bird turkey unit resulting in 400 deaths and the rejection of 500 birds at slaughter. Although mortality was not excessive, the outbreak caused significant economic impact. Losses from histomoniasis were also seen in smaller flocks of turkeys and in red-legged partridges.

Newcastle Disease in pheasants

Detail on the outbreak of Newcastle Disease can be found in **Chapter C1** of this report.

Wildlife

Surveillance for wildlife disease has been provided by the VLA since 1998. This involves diagnostic examinations of wild bird and mammal species submitted to VLA Regional Laboratories. In addition to scanning surveillance, more targeted surveillance, for example for avian influenza and West Nile Virus has been made possible by extending the scheme.

482 diagnostic submissions were made in 2005. In 72 cases no confirmed diagnosis was reached. No trends were identified in these cases.

Avian influenza

Detail on avian influenza and the planned response to it can be found in **Chapter B1** of this report.

West Nile Virus

Monitoring for the mosquito-borne West Nile Virus (WNV) has continued in conjunction with avian influenza surveillance. Human clinical cases were reported in Israel and European Russia with three fatalities. This highlights the importance of the UK monitoring program, which relies on the participation of partners across the country. 276 birds were examined this year using virology PCR and virus isolation in addition to diagnostic examinations. No evidence of WNV was found.⁵⁴

Farmland and garden bird health

In recent years a significant decline has been identified in the population of some of our common farmland and garden bird species. Disease is a possible contributory factor. *Salmonella* typhimurium is the most frequently diagnosed infectious disease with specific phage types being associated with finches and other passerine birds. Environmental contamination will probably result in exposure of other species, including man. Domestic cats will potentially become infected when they eat sick and affected birds. Where these phage types are identified in other species it probably represents 'spill-over' originating from wild birds and this is being monitored. Trichomoniasis of the upper digestive tract was diagnosed in greenfinches and chaffinches submitted from several locations. This is a well recognised condition of feral pigeons, wood pigeons and collared doves but has not previously been reported in garden birds.

Sea bird mortality

There have been significant breeding failures in some sea bird colonies, although this year the situation is far more geographically variable. The worst affected areas were the west coast colonies with puffins, arctic terns, kittiwakes, common guillemots and razorbills being particularly affected. Surveys revealed that the main food source, sand eels had dropped to half the threshold for fisheries to continue and so the European Commission closed the sand eel fisheries to conserve stocks. As the top predators, sea birds are indicators of marine ecosystem health so monitoring assists in determining management priorities. Large numbers of dead or moribund sea birds (guillemots and razorbills) were washed up on Scottish beaches in September and October. The birds had died from starvation, most likely as a result of poor weather at sea preventing the birds from feeding.

Salmonella dublin outbreak in fallow deer (*Dama dama*)

Salmonella dublin was implicated as the cause of thirty deaths and abortions in a herd of fallow deer from private parkland. The parkland is fenced and there is no public access. The risk to human health was considered and advice was provided to minimise zoonotic potential. Although *S. Dublin* is diagnosed relatively frequently as a cause of disease in domestic stock it is only sporadically identified in UK wildlife species. No outbreaks have been associated with infection in wild animals.

⁵⁴ <http://www.defra.gov.uk/corporate/vla/science/science-end-survrep-qtlyw.htm>

Flukes in otters and mink

The fluke *Psuedoamphistomum truncatum* was found in the gall bladders of otter (*Lutra lutra*) and mink (*Mustela vison*) in Southern England. This is a potentially zoonotic parasite and some evidence suggests it was probably introduced from imported fresh water fish.⁵⁵

Squirrel pox virus infection

The expansion of grey squirrel populations has continued with associated decline in red squirrels. During 2005 the pox virus in red squirrels has not been recorded in new areas in England. However, many more new cases have been diagnosed in the very north of the country, particularly in northern Cumbria where the disease has been recorded right up to the Scottish border.

Chytrid fungus in amphibians

Batrachochytrium dendrobatidis is a chytrid fungus, which grows on keratin in the skin of animals. Infection is not always associated with clinical disease but it has caused significant declines in some amphibian populations around the world, and is considered to have been a factor that has resulted in some species becoming endangered. The fungus was detected in the British Isles⁵⁶ but there was no confirmation of the disease. The fungus was found in a population of introduced American bullfrogs (*Rana catesbeiana*) in the south east of England. Further work is continuing to assess if the disease has infected native British amphibians and become established in the UK.

Bat rabies

European Bat Lyssavirus (EBLVs) are related to the classical rabies virus. They have been known to infect not only the primary hosts (insectivorous bats) but on very rare occasions other animal hosts and humans. EBLV 1 and EBLV 2 have been identified in 12 bats species, with over 90% of EBLV 1 identified in serotine bats, with *Myotis* species (including Daubenton's) associated with EBLV 2. EBLV 2 is found mainly in the UK. EBLVs are normally only transmitted by the bite of an infected bat. There is no risk to humans if bats are not approached or handled by them. Bats are a protected species and must not be deliberately disturbed, captured or killed, or their roosts damaged or destroyed.

The VLA has a long-standing programme of scanning (passive) surveillance for EBLVs in bats. This programme involves testing dead bats usually submitted by bat workers. Between 1987 and December 2005, the VLA tested 5,838 bats for lyssavirus and in that time, only four cases tested positive for live EBLV. Two of those cases were from bats in Lancashire, the others were from Sussex and Surrey.

Following the death of the Scottish bat handler in 2002, programmes of targeted (active) surveillance in England and Scotland were begun. This work involves taking samples of both blood and saliva from live bats in their roosts for laboratory analysis to check for the presence of live virus or antibodies to EBLV. The aim of the programmes is to assess the prevalence of EBLV type 1 and EBLV type 2 in England and Scotland.

⁵⁵ Veterinary Record (2005) 157, 49–52

⁵⁶ Veterinary Record (2005) 157, 386–387

On 21 May 2005, Defra released preliminary results from the first year of a three year longitudinal study into the prevalence of bat variants of rabies from 2004 work in England. This indicated a prevalence of antibodies to EBLV 2 in Daubenton's bats of about 4.2%. A single serotine bat in southern England was also found to have antibodies to EBLV 1. Full results of the study will be available in 2007. The study is funded by Defra and carried out by a variety of bodies including the VLA, Central Science Laboratory, Bristol University, and the Bat Conservation Trust (BCT) network. Further work on EBLV presence in bats in England and Scotland is ongoing. The VLA is the UK's national reference laboratory for rabies as well as the World Health Organisation Collaborating Centre for Rabies.

The European Bat Lyssaviruses Liaison Group, which has representatives from government and interested organisations, including the BCT, has contributed to the policy for dealing with human contact cases. It has also helped to coordinate and advise on post exposure treatment, prevention (especially for at-risk groups such as bat workers) and emergency response.

For more information see <http://www.defra.gov.uk/animalh/rabies/default.htm>

Rabies investigations

In 2005, 29 investigations were conducted into incidents where there was human contact. 28 of these involved bats and the other related to a fox. All were negative, allowing the country to remain rabies free according to the OIE definition.

Miscellaneous species

This section refers to exotic livestock such as camelids, deer and zoo animals.

Bovine Viral Diarrhoea in camelids

Three cases of BVD infection in alpacas were diagnosed. The animals had shown chronic ill thrift and diarrhoea prior to death. Transmission between cattle and camelids may occur but has never been unequivocally proven. In these cases, a cow aborted on the same farm and BVDV was detected in the foetus but the exact source of infection for the alpacas remains unclear. This disease risk should be considered by camelid owners. There are few documented cases of BVDV infection in camelids worldwide and further investigations will be continuing.

Malignant Catarrhal Fever

Malignant Catarrhal Fever (MCF) was diagnosed in water buffalo and farmed deer. The clinical signs included corneal opacities, nasal discharge, weight loss and diarrhoea in water buffalo and acute nervous signs in deer. Water buffalo appear to be relatively susceptible to MCF and deer are well recognised as being highly susceptible. The mode of spread of sheep-associated-MCF as reported here is largely unknown.

C4: Livestock health planning

Farm health planning is not a new concept and many are already using it successfully, but there is more that could be done to encourage a more proactive approach and wider use, so that more may gain from its benefits. Under the Action Plan for Positive Animal Health, developed with industry, we are working in partnership to promote wider use of farm health planning by developing clear and consistent messages and help develop mechanisms to support farmers and their advisors to plan actively for animal health. This contributes in particular to the aim of animal keepers looking after their animals to a high standard and that prevention is better than cure. This work represents a key initiative for positive animal health as set out in the Animal Health and Welfare Strategy for Great Britain.

Farm health planning in England

During 2005 Defra continued to build partnerships with the farming industry to develop strategies to encourage wider and more proactive use of farm health planning in England. Industry groups, in conjunction with Defra, have been developing planning templates and farm level costs/benefits models to help promote positive health planning in practice.

The health planning groups and Defra have also been working to develop mechanisms to identify initiatives which will help to develop and champion partnerships across the industry, not least between farmers and their advisors, to support active farm health planning. These mechanisms will vary to reflect the specific and differing needs of each sector.

Defra has been working with each sector to develop a tailored awareness campaign to promulgate messages developed by the industry groups. This publicity will reflect both sector-specific approaches and more general messages on farm health planning, together with information on individual disease initiatives and other work under the Animal Health and Welfare Strategy. It is important that this is presented consistently, and in a way which reflects the work being carried out across the sector partnerships and wider industry.

Farm Level Costs-Benefits Models

The University of Reading was commissioned to develop simulation models capable of demonstrating to farmers and advisers the financial impact of selected livestock diseases on the farm business in addition to the costs and benefits associated with farm level measures for disease control. While these models are not health plans in themselves, they are intended to assist the farmer and their adviser in the decision making process when using a dynamic health plan.

The selected diseases have been identified by the species subgroups as key for each sector. The first six models (in respect of two dairy, two sheep, one pig and one poultry disease) are currently undergoing a period of validation and refinement using farmer and vet groups and have been well received. The sector subgroups have identified a central role for the models as part of the broader awareness campaign on health planning, and they will be used in conjunction with the health planning templates at farm level. Building on this success, a further set of six models has also been commissioned and as before, the diseases were chosen on the advice of the species subgroups.

Farm Health Planning in Scotland

As part of the Scottish Rural Development Programme the Scottish Executive has, through the Land Management Contract (LMC) Menu Scheme, offered livestock farmers the opportunity to claim support to develop and implement Animal Health and Welfare Management Programmes. For those choosing this LMC Menu Scheme option, it is a five year commitment to produce and annually review an animal health and welfare management plan for their farm business in conjunction with their veterinary surgeon. To support the implementation of this plan there are also a number of voluntary measures on offer that attract further funding to enable improvements in biosecurity; facilitate the benchmarking of livestock health, welfare and performance; assist with the analysis of forage quality or help with the undertaking of on-farm sampling to establish disease status. Further details can be found in the LMC Menu scheme guidance on the Scottish Executive's website at <http://www.scotland.gov.uk/Resource/Doc/37432/0010256.pdf>

In the first year of the Animal Health and Welfare Management Programme, almost 4,000 livestock producers (20% of the eligible group) signed up and it is expected that more will join the scheme in future scheme years. As part of continuing developments the Scottish Executive is working closely with stakeholders to put in place a database where producers, through their veterinary surgeons, can compare the incidence of certain health and welfare conditions on their farm relative to other farms of a similar type.

Farm Health Planning in Wales

The Welsh Assembly Government and in particular the Office of the CVO (Wales), have been working in partnership with industry through the Welsh Animal Health and Welfare Implementation Steering Group, and developed Animal Health Planning tools in the form of frameworks for the beef, sheep and dairy sectors with accompanying guidance notes.

Disease initiatives

We are also working in partnership with the farming industry to develop strategies to address individual diseases, such as BVD and Johne's disease. These initiatives aim to bring people together across the industry to:

- help raise awareness of these diseases and their prevention and control
- promote key activities to encourage proactive control of these diseases.

BVD initiative

In October 2005, Defra hosted a meeting of representatives of the cattle industry, the British Cattle Veterinary Association and researchers to discuss the problem of BVD in GB cattle herds and the significant loss to the industry it causes.

There was broad agreement that the idea of a GB BVD eradication campaign should be developed. One important outcome of this meeting was the recognition that industry needs to take the lead role in GB, just as it has in other countries.

Defra is now facilitating the process of building a closer partnership between veterinary experts and industry groups to develop a possible industry-led BVD control programme. This is an opportunity to put the principles of the Strategy into action, particularly working in partnership and encouraged shared ownership and responsibility for animal health and welfare. Three industry working groups have been established to develop proposals that will be shared with the wider cattle industry shortly.

The industry planning groups are in the early stages of developing their ideas for a control strategy. However, the willingness of a number of experts and interested parties to improve the future health and welfare, and productivity of the UK cattle herd is encouraging.

Johne's disease initiative

Defra helped facilitate a working group of farmers, vets, and research institutions to further develop understanding of Johne's disease, another disease which has a significant economic impact on the cattle industry. The aim again is to help the industry take a lead in developing initiatives to address the impacts of this disease.

This led to the formulation of some clear, straightforward literature and presentations aimed at both livestock farmers and the veterinary profession which have been distributed widely throughout the industry to raise awareness.

Section D: International animal health

D1: International trade imports

The CVO (UK) has overall responsibility for the animal health and welfare aspects of international trade of animals and animal products. Agriculture Departments in GB continued to play an important role in maintaining GB's defences against the introduction of serious livestock diseases.

All consignments imported from Third Countries are subject to checks at the port of entry into the EU. Checks on animals are carried out on the basis of a disease risk assessment at their destination in GB.

During 2005 we continued to monitor and respond to the spread of highly pathogenic avian influenza (HPAI).

Border Inspection Posts

Animal and animal products from Third Countries, subject to veterinary checks under EU law, must be imported through an approved Border Inspection Post (BIP). They are subject to a documentary check, an identity check and, for a specified percentage, a physical check with samples taken for laboratory analysis if appropriate. BIPs must have facilities meeting the requirements of EU law and may operate only after inclusion in the Commission Decision listing approved BIPs. Before this can happen they must be inspected by the European Commission.

There are six BIPs approved to inspect live animals and 28 approved to inspect animal products. Lists of BIPs are available on the Defra website at <http://www.defra.gov.uk/animalh/int-trde/animl-im/livebips.htm> for live animals; and <http://www.defra.gov.uk/animalh/int-trde/prod-im/prodbips.htm> for animal products.

Border Inspection Post Liaison

During 2005, SVS officers made regular visits to BIPs which check animal products to offer advice and check their compliance with EU legislation. These visits have helped to build good relationships with port health authorities, who are responsible for carrying out the veterinary checks, and the port operators. If deficiencies are found, a procedure is in place to ensure their correction in a timely manner.

Intra-community trade

Cattle

Some 7,270 cattle entered GB from other EU Member States, mainly from Denmark and the Republic of Ireland. In addition 5,015 cattle were imported from Northern Ireland of which over half were for breeding.

Sheep and goats

9,722 sheep and goats entered GB from other EU Member States mainly from the Republic of Ireland. Additionally, 58,983 sheep and goats were imported from Northern Ireland, 25,370 of which were for slaughter.

Pigs

67,959 pigs entered GB from other EU Member States (mainly from the Republic of Ireland), whilst 7,078 pigs were imported from Northern Ireland, 6,944 of which were for slaughter.

Equidae

5,867 horses entered GB from other EU Member States during 2005. The majority of these came from Belgium and Denmark.

Poultry

We have paid particular attention to this trade as a result of the outbreaks of avian influenza in other European countries. There have, however, been some problems in collecting figures for import of poultry from other member states. Investigations indicate that there have been mis-recordings of import statistics, with confusion between the coding of poultry and hatching eggs. Discussions will take place with the Commission to resolve this problem.

Semen, ova and embryos

Due to the classification under the new EU based trade certification system (TRACES) specific species data on semen, ova and embryos could not be extracted.

Zoo animals

Zoo animals imported from other Member States included reindeer, two pygmy hippopotamuses, 45 antelope and two rhinoceroses. In addition, antelope and reindeer were imported from Northern Ireland.

Third Countries

Livestock and other ruminants

A number of consignments of alpacas were imported from Chile and Switzerland. Additionally, 126 breeding pigs and one sheep were imported from Canada.

Equidae

2,771 horses were imported from Third Countries, the majority of which came from Argentina.

Poultry

Most British poultry imports consist of grandparent breeding stock destined for the main chicken and hen breeding companies. The principal country of origin was the USA, reflecting the multinational character of the poultry breeding industry.

Several countries have reported outbreaks of highly pathogenic avian influenza in 2005. Of these countries only Romania and Croatia were previously allowed to export live poultry or hatching eggs into the EU. The EU Commission has since issued legislation prohibiting the import from these countries of live poultry and hatching eggs into Member States.

Captive birds

In October 2005 the European Commission introduced a ban on captive birds from third countries. Prior to this ban third country captive bird imports were required to undergo quarantine in an approved premises. By the end of 2005 there were 52 approved premises in GB.

Pet birds

In October 2005, the European Commission placed restriction on pet birds imported from outside the EU. Pet birds from third countries may only come through specific BIPs.

Zoo animals

Importation from third countries of zoo animals included two rhinoceroses from South Africa.

Import of animal products

The Products of Animal Origin (Third Country Imports) (England) Regulations 2004 came into force on 1 February 2005. These Regulations revoke and re-enact with changes the Products of Animal Origin (Third Country Imports) (England) (No.3) Regulations 2004 (S.I. 2004/2640). The principal changes are to regulation 3, products introduced into England with the previous authorisation of the Secretary of State as trade samples, for exhibition, or for particular studies or analyses, and to Schedules 1 and 2, which have been revised to implement Community instruments that have come into force since the Products of Animal Origin (Third Country Imports) (England) (No. 3) Regulations 2004 were made.

D2: International disease monitoring and risk assessment

Defra closely monitors outbreaks of high impact diseases wherever they occur around the world. The main diseases of concern are those which would have a significant impact if introduced into the UK (i.e., African horse sickness, African swine fever, bluetongue, classical swine fever, contagious bovine pleuropneumonia, foot and mouth disease, highly pathogenic avian influenza, lumpy skin disease, Newcastle Disease, peste des petits ruminants, Rift Valley fever, rinderpest, sheep and goat pox, swine vesicular disease and vesicular stomatitis).

Other diseases such as rabies, bovine spongiform encephalopathy, scrapie and West Nile virus are also monitored for incidents of significance to the UK. The two main objectives are to be alert to disease outbreaks in countries that trade with the UK and, should such outbreaks occur, to conduct qualitative risk assessments to inform import policy decisions in the UK and other interested parties.

Monitoring disease outbreaks and increasing awareness

Defra monitors closely the occurrence of the specified diseases in the EU, countries neighbouring the EU, and third countries; with the objective of maintaining an ongoing awareness in the UK of the current status of disease threats worldwide. This is communicated through quarterly reports on international animal health, disease surveillance and trade issues that are published in the 'Veterinary Record'. The 2005 reports can be found at <http://www.defra.gov.uk/animalh/diseases/monitoring/vetrecord.htm>.

Risk assessment

UK imports of animals and animal products from EU Member States and third countries must comply with strict EU rules designed to mitigate the risk of introduction of disease. Imports of live animals and animal products may present an increased risk if a disease outbreak is reported in the exporting country.

Should an outbreak occur, the team conducts a preliminary outbreak assessment to evaluate the likelihood of disease being introduced to the UK. If the preliminary assessment indicates that the risk has not changed then the preliminary outbreak assessment may be published on Defra's website <http://www.defra.gov.uk/animalh/diseases/monitoring/poa.htm>.

If the risk has changed, or other factors indicate that it is necessary, then the team will conduct a qualitative risk assessment to ascertain the likelihood of disease being introduced to the UK through legal trade and other possible pathways.

Section D – Chapter D2

The main objective of these risk assessments is to inform policy decisions on the initiation of appropriate, risk-based safeguard measures to mitigate the risk to UK animal health. This includes assessing the effectiveness of safeguard measures the affected country has put in place to control disease on the ground, and to prevent its spread to other countries through export controls. If there has been a delay in detecting or reporting disease, then the team carries out investigations to determine whether disease could have been introduced through imports that took place before the outbreak was reported and confirmed. The assessments are usually produced within 24–48 hours of the event and are then published on Defra's website <http://www.defra.gov.uk/animalh/diseases/monitoring/index.htm>.

If the increase in the risk is assessed as significant, Defra acts quickly to mitigate the risk, usually in concert with the EU. It may also take unilateral safeguard measures to block imports from countries or regions with outbreaks of disease, but aims to co-operate with the EU Commission from the outset. It also ensures that appropriate tracing and checking of recent imports and of any trade commodities that may present a risk, takes place.

It is recognised that there is a background level of disease in many countries that is not always reported. Many diseases are endemic in much of the world and there is a risk that such diseases could enter the UK at any time, for example through illegal imports. The EU and UK have enhanced their controls on imports of illegal meat and meat products to reduce this risk. However, it is important to note that this cannot be reduced to zero risk. Close working with HM Revenue and Customs (HMRC) helps mitigate this risk to negligible levels. However, the risk posed to the UK by some diseases may increase because of natural phenomena (e.g. migrating birds, windborne spread, insect vectors, climate change) or human activities (e.g. movement of contaminated objects, movement of people).

During 2005, 26 preliminary outbreak assessments (covering foot and mouth disease, highly pathogenic avian influenza, low pathogenic avian influenza, Newcastle Disease, bluetongue and peste des petits ruminants) and 13 qualitative risk assessments (covering highly pathogenic avian influenza, foot and mouth disease and Newcastle Disease) were published.

It is possible for readers both within GB and elsewhere to submit comments on these risk assessments by emailing ahweb@defra.gsi.gov.uk.

To ensure an ongoing improvement in the quality of the risk assessments, the team had the Royal Veterinary College, University of London carry out an official peer review of a number of the published risk assessments and has implemented the review's recommendations.

An active network of national and international contacts and collaboration is maintained. These include UK government departments and agencies, various non-government organisations as well as international bodies such as OIE, European Commission (SANCO) and Food and Agriculture Organisation (FAO).

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Table D2.1: Disease outbreaks reported by EU Member States during 2005⁵⁷

COUNTRY	SVD	BT	CSF	CSF-WB	ASF	ND	BSE
Andorra							2
Austria							2
Bulgaria						1	
Switzerland							3
Czech Republic							8
Cyprus						1	
Germany				23			32
Denmark						1	1
Spain		87					98
France		6				3	2
United Kingdom						1	225
Greece						5	
Ireland							69
Italy	13				198		3
Luxembourg							1
Netherlands							3
Poland							20
Portugal						1	51
Sweden						1	
Slovakia						1	2
Total	13	93	1	23	198	15	522

KEY TO DISEASE CODES

<i>FMD</i>	<i>Foot and mouth disease</i>	<i>AI</i>	<i>Avian influenza (was fowl plague)</i>
<i>SVD</i>	<i>Swine vesicular disease</i>	<i>VS</i>	<i>Vesicular Stomatitis</i>
<i>RP</i>	<i>Rinderpest</i>	<i>PPR</i>	<i>Peste des petits ruminants</i>
<i>CBPP</i>	<i>Contagious bovine pleuropneumonia</i>	<i>LSD</i>	<i>Lumpy skin disease</i>
<i>BT</i>	<i>Bluetongue</i>	<i>SPGP</i>	<i>Sheep pox and goat pox</i>
<i>CSF</i>	<i>Classical swine fever in domestic swine</i>	<i>AHS</i>	<i>African horse sickness</i>
<i>CSF WB</i>	<i>Classical swine fever in feral pigs</i>	<i>RVF</i>	<i>Rift valley fever</i>
<i>ASF</i>	<i>African swine fever</i>	<i>BSE</i>	<i>Bovine spongiform encephalopathy</i>
<i>ND</i>	<i>Newcastle disease</i>	<i>EEM</i>	<i>Equine Encephalomyelitis (of all types, including Venezuelan Equine Encephalomyelitis)</i>

The following diseases were not reported under ADNS in 2005:
AHS, AI, CBPP, EEM, FMD, LSD, PPR, RVF, SPGP and VS.

The following countries did not represent any disease outbreaks to ADNS in 2005:
Belgium, Estonia, Finland, Faroe Islands, Hungary, Iceland, Lithuania, Latvia, Malta, Norway, Romania and Slovenia.

⁵⁷ The data in this table was extracted from detailed information sent by each Member State to the European Commission via the Animal Disease Notification System (ADNS).

D3: International trade exports

British Agricultural Departments are responsible for ensuring that intra-community trade in live animals, their genetic material and animal products is undertaken in accordance with EU rules. In the case of exports to Third Countries Defra negotiates and drafts the necessary health certification to meet the conditions for import into the country of destination.

Intra-community trade

Trade Control and Expert System

The UK played an active role in helping the European Commission develop a Trade Control and Expert System (TRACES). TRACES is an internet based service for exporters, importers and officials, which provides for electronic notification of trade in live animals, animal products and germplasm. The system has been fully operational by SVS Animal Health Divisional Offices since 1 January 2005. TRACES has also been implemented in UK Border Inspection Posts (BIPs) to enable electronic notification of imports of live animals, germplasm and products of animal origin from third countries. In parallel with the introduction of TRACES, Defra is also in the process of introducing the TRACES Risk Management System (TRMS) which will be used by the SVS to target consignments of live animals for post-import checks.

Tripartite agreement

On 23 February 2005, the tripartite agreement was reviewed by a technical working group formed of veterinary representative from France, Ireland and the UK and a revised agreement came into force on 18 May 2005. The new rules apply to the movement of equidae for breeding and production, the main rule one being that these equidae no longer need to be accompanied by official health certification.

Table D3.1: Export of animals to other EU Member States 2000–2005

	2000	2001	2002	2003	2004 ^b	2005
Cattle	0	0	0	0	0	0
Sheep and Goats	607,799	84,232	138,718	70,070	134,694	41,580
Pigs	85,819	12,201	22,083	27,410	51,686	23,082
Horses ^a	8,313	13,433	9,800	8,054	6,444	4,862

^a These figures do not include exports of horses to the Republic of Ireland (ROI) or of registered horses to France because they do not require official export health certification and, as such, do not need to be recorded on either ANIMO or TRACES. During 2005 this arrangement was extended to bring all horse exports to France in line with the rules in place for horse exports to the ROI. Exports of horses to France are therefore also excluded from these figures. However, during 2001 and early 2002, horses to the ROI and France had to be accompanied by health certificates as a result of the 2001 FMD outbreak.

^b The concurrent existence of both the ANIMO system and TRACES during 2004 led to duplication of data. We have now been able to identify and remove duplicate records and the figures for 2004 have been revised accordingly.

Germplasm

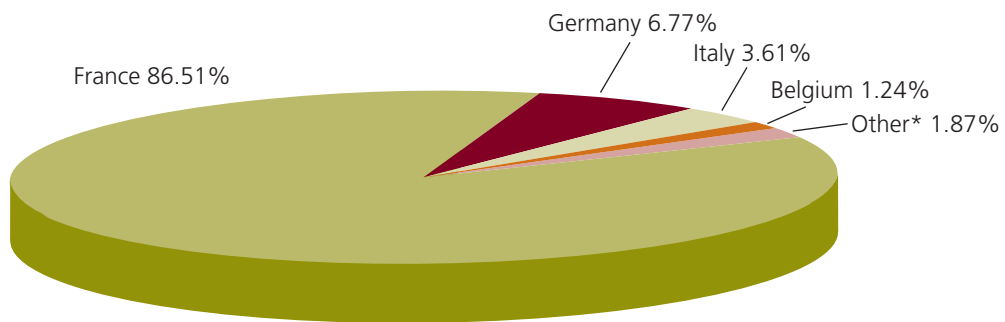
The main destinations for bovine semen during 2005 were France (158,500), Republic of Ireland (90,658) and the Netherlands (70,866). The majority of the trade in semen derived from other species was with Italy (14,314) and Spain (4,552).

Due to the way in which TRACES categorises germplasm, it is not possible to obtain specific data for all species.

Sheep and goats

The great majority of sheep and goats were exported to France (35,971). Other destinations included Germany (2,817) and Italy (1,500).

Figure D3.1: Export of sheep and goats to EC Member States during 2005

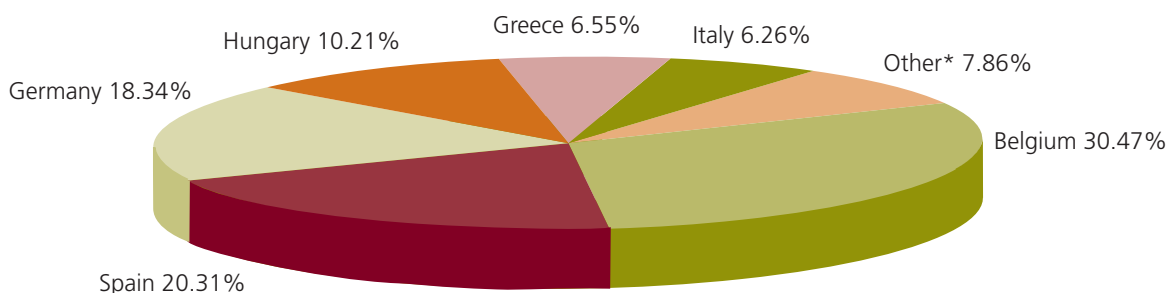


*Other = Estonia, Netherlands, Ireland, Spain and Finland

Pigs

Pigs were primarily exported to Belgium (7,032), Spain (4,687), Germany (4,234) and Hungary (2,357).

Figure D3.2: Export of pigs to EC Member States during 2005



*Other = Netherlands, Slovenia, Poland, Cyprus, France, Luxembourg and Ireland

Section D – Chapter D3

Horses

The main countries to which horses were exported during 2005 were Germany (1,203) and the Netherlands (944).

Poultry

The vast majority of poultry exports during 2005 were to the Netherlands (4,487,539), the Republic of Ireland (2,611,436) and the Czech Republic (1,349,260). Main destinations for hatching egg exports were Hungary (6,886,684), France (4,838,567) and Germany (3,108,779).

Figure D3.3: Export of poultry to EC Member States during 2005

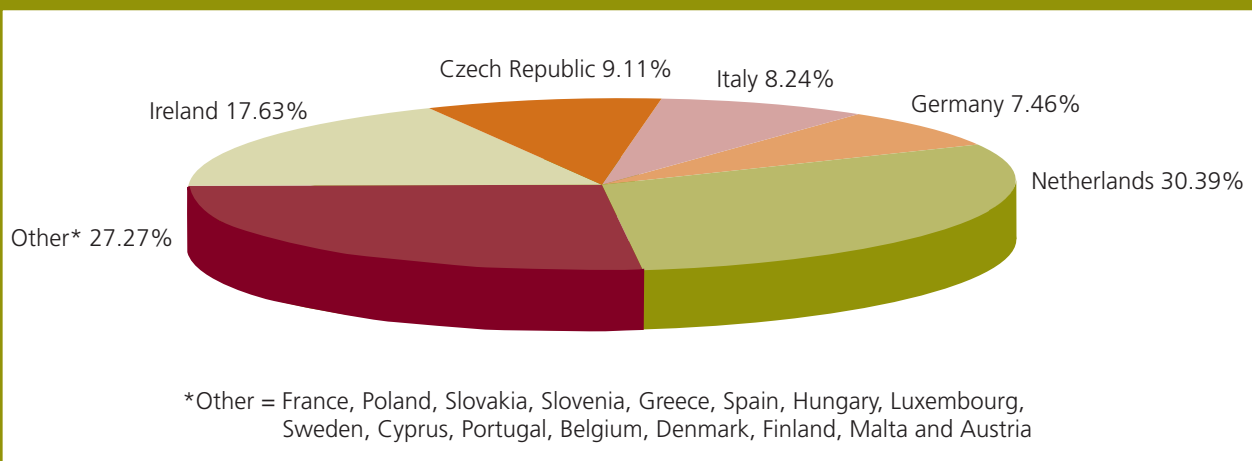
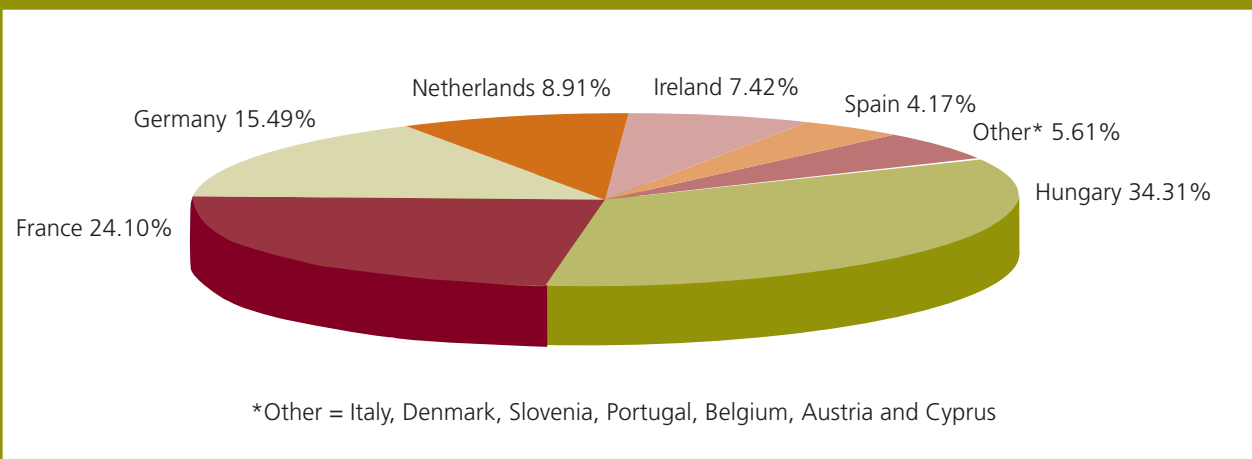


Figure D3.4: Export of hatching eggs to EC Member States during 2005



Exports to Third Countries

Defra continued to devote considerable effort in negotiating new and revised export health certificates with Third Country governments during 2005. The year saw some important steps forward in terms of successfully negotiating export health certification thus opening important export market opportunities for UK exporters. This was aided by the partnership approach Defra has with GB industry including at the two Export Certification User Groups (ECUGs) (one covering breeding livestock, livestock genetics, pigmeat, and one covering milk and dairy products).

Following extensive negotiations with the Chinese government, China lifted its Classical Swine Fever (CSF) related import ban on the UK in 2005 and subsequently agreed to an export health certificate for breeding pigs. This was an important step towards gaining access to the more lucrative pig meat exports market to China. The British Embassy in Beijing continued to help UK efforts to persuade the Chinese authorities to gain access to this important market.

Close liaison with overseas governments through British Embassies and High Commissions succeeded in keeping open most poultry export markets despite the threat of import restrictions by importing countries because of global nervousness about avian diseases.

Cattle germplasm

Bovine semen export markets opened during 2005 including Argentina, Colombia, Egypt, Malaysia, Mexico, United Arab Emirates and Uruguay.

Pigs and porcine semen

Export health certification for breeding pigs were agreed with China, Taiwan and Vietnam. Porcine semen certification was agreed with Mexico, Taiwan, USA and Vietnam.

Milk and dairy products

New dairy product export health certificates included those agreed with the Russian Federation, Bosnia/Herzegovina, Mexico, and USA.

Horses and equine semen

New horse export certificates included the Russian Federation and Tunisia.

Poultry

New export health certificates for day old chicks and hatching eggs included those agreed with the Russian Federation, Turkey, Croatia, Uzbekistan, Brazil, Nepal, Sri Lanka, Thailand and Rwanda.

Sheep and goats and their germplasm

New export health certificates for sheep and ovine and caprine semen were agreed including with Barbados and Trinidad and Tobago.

D4: Safeguard measures

Restrictions were put in place on the importation of live animals, their germplasm and, as appropriate, their products, where necessary as a result of disease outbreaks in Third Countries which may present a risk to animal or public health in GB.

For animals and genetic material, these restrictions were applied by Declarations made under Regulation 27 of the Animals and Animal Products (Import and Export) (England) Regulations 2005. For animal products the equivalent legal base is Regulation 59 of the Products of Animal Origin (Third Country Imports) (England) (No4) Regulations 2004. Similar Declarations were issued by Northern Ireland, Wales and Scotland under their equivalent legislation.

Restrictions were put in place on the importation of live animals, their germplasm and meat and other animal products where necessary as a result of disease outbreaks in other EU Member States or Third Countries which were liable to present a risk to animal or public health. The appropriate legislation is:

Regulation 27 of the Animals and Animal Products (Import and Export) (No 2) Regulations 2004/ Regulation 27 of the Animals and Animal Products (Import and Export) (England) Regulations 2005	Imports of live animals from third countries; Intra-Community trade in genetic material
Regulation 59 of the Products of Animal Origin (Third Country Imports) (England) (No 4) Regulations 2004	Imports of meat, meat products and genetic material from third countries
Regulation 35 of the Products of Animal Origin (Import and Export) Regulations 1996	Intra-community trade in meat and other animal products

In England, two Declarations were issued in respect of intra-Community trade and 18 Declarations for third country imports to prohibit or restrict imports from specified regions, areas or territories or to revoke any previous prohibitions. Similar Declarations were issued by Northern Ireland, Wales and Scotland under their equivalent legislation.

Illegal imports

Personal imports of meat and dairy products are banned from most countries outside the EU and restrictions apply to other products of animal origin (POAO). We continue to make progress in tackling illegal imports.

Border controls

Within GB, Her Majesty's Revenue and Customs (HMRC) has responsibility for anti smuggling controls at the border on imports of POAO from outside the EU.

All HMRC detection staff have anti-smuggling responsibilities for POAO (over 3,500 staff). Within this, HMRC has a dedicated resource (approximately 100 officers) whose primary responsibility is to detect illegal POAO. Controls are carried out on a risk assessed basis targeting those routes of entry considered to make the greatest contribution to the flow of disease into GB. There is also a ten meat detector dog programme. HMRC have installed new baggage x-ray scanners at selected major airports to find all illicit items, including POAO.

Since March 2004 HMRC have made nine successful prosecutions (one of which was a postal import). Seizures of illegal imports of POAO totalled 25,610 in the year ending March 2005, (62% increase on 2003/04), reflecting the continued increase in enforcement activity. HMRC accounts for about 99% of all UK seizures.

Given the recent outbreaks of avian influenza in South East Asia, Europe and Turkey, HMRC have enhanced checks on passengers, freight and post from affected countries. This is being kept under review. A flyer on avian influenza is being issued to passengers leaving the UK and travelling to H5N1 affected countries.

Raising awareness

A large amount of publicity activity has been undertaken in the past year to raise awareness in GB and abroad. Distributing leaflets to a large number of organisations (universities, student groups, volunteer organisations, charities and travel guide companies) that provide information to individuals coming to, or returning to, GB, as well as sending leaflets to General Practitioner (GP) surgeries.

A major phase of the campaign launched in 2004 focused on communities who may bring back food items from their trips abroad, and was conducted by a specialist publicity agency. Bilingual leaflets and posters in nine different languages, over 60,000 leaflets and 15,000 posters have been distributed to date. Since it was launched in 2004, our branded mobile unit has toured the country, visiting more than 60 specific cultural, religious, and community events. There has been positive feedback plus good media coverage in national, local and ethnic press.

An advertising campaign aimed at British travellers who research and book trips abroad online has also been undertaken.

In addition, warning letters and public notices were issued to all passengers from whom products were seized, and also to those receiving items in the post, thus ensuring better understanding of the rules.

HMRC are increasing awareness in key regions abroad through local advertising campaigns and co-operation with local Embassies, visa offices and international airlines. They have developed bilingual publicity materials, which detail the rules for specific countries.

Section D – Chapter D4

Risk assessment

We have commissioned the VLA to undertake a qualitative risk assessment to determine how the risk from illegal imports fit into the wider context of import risk including illegal imports and EU trade, and so examine the risk across the range of means of entry, both legal and illegal, and for both live animals and POAO. This will feed into longer term enforcement strategies. The report will be published in Spring 2006.

Partnerships

We continue to work closely with the Central Office of Information (COI) Greater London Authority, International Fund for Animal Welfare, Food Standards Agency, Chartered Institute of Environmental Health, Local Authorities, Coordinators of Regulatory Services and the Islamic Culture Centre.

D5: Livestock protection

The purpose of animal breeding controls is to protect animal welfare and to reduce the risk of breeding practices being involved in the introduction or spread of diseases in livestock populations.

Bovine artificial insemination

The Artificial Insemination of Cattle (Animal Health) (England and Wales) Regulations 1985 (as amended) govern the collection, storage, and supply of bovine semen for the domestic market, as well as training of laypersons and the carrying out of artificial insemination by such persons. The artificial insemination industry and market has changed significantly since the making of these regulations and is now out of step with modern industry practices.

Following a review of the domestic regulations, which started in November 2003, new proposed controls were created – the Bovine Semen Regulations and the Bovine Semen Fees Regulations. A public consultation was held on these in 2004 and following the results of this exercise, proposals were amended to take account of any necessary changes and discussed with industry representatives.

In the consultation document, the industry were informed that issues relating to artificial insemination training courses and the carrying out of artificial insemination by trained layperson ('permitted persons') would no longer be covered by the proposed regulations. They were advised that a consultation on the issues relating to artificial insemination by trained layperson via an Exemption Order under the Veterinary Surgeons Act 1966 (as amended) would take place separately. The consultation on the proposed Order was carried out between 27 January and 21 April 2005.

In order to assure full statutory cover for all sections of the bovine semen industry, it has been decided that all these new pieces of legislation (Bovine Semen Regulations, its associated Bovine Fees Regulations, and the Exemption Order under the Veterinary Surgeons Act 1966 (as amended)) must come into force at the same time. The new Regulations are anticipated to come into force in 2006.

Porcine artificial insemination

The Artificial Insemination of Pigs (England and Wales) Regulations 1964 (as amended), as with the cattle regulations, have been recognised as being out of date with current industry practices. A review exercise commenced in 2004 looking at both the domestic and non-legislative aspects of porcine semen production.

Working Group meetings, formed of officials and industry representatives, have helped formulate instructions for lawyers in 2005 to draw up new draft regulations: the Porcine Semen Regulations, which propose to bring the whole of the industry under effective legislative control requirements. The new regulations are anticipated to come into force in 2006.

Section D – Chapter D5

Table D5.1: Number of artificial insemination licences granted in GB during 2005

	Licences Issued in 2005			Total existing licences at 31/12/05			Total
	England	Scotland	Wales	England	Scotland	Wales	GB
EU Bovine Semen Processing Centres	0	0	0	4	0	1	5
Domestic Bovine Semen Processing Centres	0	0	0	2	0	1	3
Bovine Semen Main Stores	2	0	0	6	1	3	10
Bovine Semen Supply Centres	4	0	0	40	7	6	53
Bovine Semen Shops	1	0	0	13	0	2	15
Bovine Semen Farm Storage Units	123	23	17	6,070	1,166	1,130	8,366
Bovine Farm Storage Servicing Licences	0	0	0	14	2	5	21
On-Farm Processing Licences for Bovine semen	3	0	0	5	5	2	12
EU Porcine Semen Collection Centres	0	0	0	10	1	0	11
Domestic Porcine Semen Collection Centres	0	0	0	4	0	0	4
EU Bovine Embryo Collection Teams	1	0	0	18	5	0	23
Domestic Bovine Embryo Collection Teams	0	0	0	2	0	1	3
Bovine Embryo Production Teams	1	0	0	3	1	0	4
Bovine Embryo Transfer Teams	1	0	0	21	3	6	30
EU Embryo Stores	2	0	0	16	0	0	16
Domestic Embryo Stores – On-Farm & Non-Farm	2	0	0	38	10	10	58
EU Ovine/Caprine Embryo Collection Teams	0	0	0	1	1	0	2
EU Ovine/Caprine Semen Collection Teams	1	0	0	2	1	0	3
EU Bulls							
Approved	137	0	161	N/A	N/A	N/A	N/A
Rejected	13	0	3	–	–	–	–
Domestic Bulls							
Approved	18	0	5	–	–	–	–
(On-farm collection) Rejected	3	0	0	–	–	–	–
Domestic Bulls							
Approved	52	44	16	–	–	–	–
(On-farm collection) Rejected	0	22	0	–	–	–	–
EU Boars							
Approved	696	52	0	–	–	–	–
Rejected	10	0	0	–	–	–	–
Domestic Boars							
Approved	214	0	0	–	–	–	–
Rejected	0	0	0	–	–	–	–

NB: Domestic indicates semen or embryos destined for domestic distribution only.

Section E: Animal welfare

E1: Animal Welfare Bill

The Animal Welfare Bill represents a significant development in animal welfare legislation. Its aim is to improve animal welfare and to reduce unnecessary suffering. It brings together and modernises welfare legislation relating to farmed and non-farmed animals, some of which dates from 1911. Most importantly it introduces a duty on those responsible for all vertebrate animals, not just farmed animals, to ensure the welfare of animals in their care. Where necessary, enforcers of welfare laws will be able to take action if a person responsible for an animal is not taking all reasonable steps to ensure the welfare of their animal, even if it is not currently suffering.

Key elements

The Bill sets out measures to reduce animal suffering by enabling preventive action to be taken before suffering occurs. It simplifies the legislation for enforcers and animal keepers by consolidating over 20 pieces of legislation into one.

The Bill extends the existing power to make secondary legislation to promote the welfare of farmed animals to non-farmed animals, bringing legislation for non-farmed animals in line with that for farmed animals. It also sets out measures to deter persistent offenders by strengthening penalties and eliminating many loopholes in the current system.

Other key features include:

- extending to companion animals welfare codes agreed by Parliament, a mechanism currently used to provide guidance on welfare standards for farmed animals;
- strengthening and amending current offences related to animal fighting;
- increasing from 12 to 16 the minimum age at which a child may buy an animal, and prohibit the giving of pets as prizes to unaccompanied children under the age of 16;
- banning mutilations of animals, with certain specified exemptions.

Progress

The Animal Welfare Bill had its Introduction and First Reading in the House of Commons on 13 October 2005.

The Bill was produced following nearly four years of extensive consultation with all the main organisations with an interest in animal welfare. It was subject to extensive pre-legislative scrutiny by the House of Commons Environment, Food and Rural Affairs (EFRA) Select Committee. The Committee conducted a further short inquiry following publication of the Bill – this report welcomed the revised Bill and was published in December 2005.

Section E – Chapter E1

The Bill promotes the welfare of vertebrate animals other than those in the wild. The Bill is very much in keeping with the objectives and principles of the Animal Health and Welfare Strategy. The promotion of the benefits of animal health and welfare and the philosophy that “prevention is better than cure” are central to the Bill. Animals that are cared for appropriately and in accordance with high welfare standards are more likely to be healthy, and less likely to contract or spread disease, resulting in greater sustainability and productivity. It is hoped that the new Act will come into force in autumn 2006.

Further information on the Animal Welfare Bill can be found on the Defra website at:
<http://www.defra.gov.uk/animalh/welfare/bill/index.htm>

E2: Animal welfare on farm, during transport, at market and at slaughter

During 2005 we have worked in partnership with industry and enforcement stakeholders on workshops and guidance for poultry keepers to help them prepare for an avian influenza outbreak, as well as ensuring that the SVS has the necessary training and equipment to slaughter birds rapidly and humanely. We have made steady progress during the year towards our objective of ensuring animals are treated humanely both domestically and internationally, with our focus being primarily on raising standards amongst the poorer performers. Negotiations in the EU on a Meat Chicken Directive started in May and made progress under our Presidency. In May, the OIE agreed for the first time guidelines on animal welfare. A new Chairman was appointed to the Farm Animal Welfare Council (FAWC) and the Council have been drawing up a strategic business plan for the next five years.

Legislation

The Animal Welfare Bill is the most important legislative development in 2005, however, progress has also been made on legislation in the following areas:

Welfare in transport

We have been working in partnership with the industry, animal welfare organisations and enforcement bodies to develop our proposals to implement new EU rules on the welfare of animals during transport due to be implemented with effect from January 2007.

Welfare on farms

The European Commission published an innovative proposal for a Directive on the welfare of broiler chickens and we took forward negotiations on this directive during the UK's Presidency of the EU. The proposal seeks to achieve a balance between real welfare benefits for broilers and economic, social and environmental impacts. It takes into account a range of factors including the latest scientific evidence, veterinary advice, consumer concerns and industry practice. Good progress has been made in Council Working Groups and we continue to support the Austrians on this work throughout their Presidency.

Welfare at slaughter

A major priority in 2005 was to develop a robust response to the threat of an outbreak of avian influenza. As part of our contingency planning, we identified potential gaps in legislation that could hamper our ability to deliver adequate slaughter capacity. As a result we will be consulting in 2006 on proposed legislative changes to provide enhanced flexibility in the methods available to cull birds in emergency situations

Research and development

Defra relies on contemporary and accurate research to inform its policies and influence its decision making. The research and development programme helps provide a sound scientific basis on which to ensure that improvements to welfare legislation and codes of practice are evidence-based.

Funding for animal welfare research and development in 2005–2006 was £3.535 million. Further detail on where this money was allocated can be found in Chapter A5 of this report.

Research to counter a major welfare concern in poultry abattoirs and identify innovative methods to stop live birds from entering the scald tank was concluded. The project delivered a system of sensing when birds on a shackle line have not received an adequate neck cut and prevents these birds entering the scald tank.

Reviews of on farm pig, poultry and ruminants welfare research, led to the following outcomes:

For pigs – it was decided that more resources should be directed towards the welfare of pigs from weaning to finishing.

For poultry – that we should focus on meat (broiler) chicken leg health and laying hen bone strength, behaviour and cage design. A key objective is to investigate and develop acceptable alternatives to the conventional battery cage, which satisfy the welfare requirements of the hen and the viability of the commercial system.

For ruminants – future research should include work on disease aspects (including parasitism and infection); the effects of husbandry systems (including management of intensive and extensive systems); and further work on lameness in cattle and sheep.

Our transport research is intended to provide a better understanding of the effects of transport on farmed livestock and poultry, including water and rest requirements for long distance journeys and factors such as vehicle design, handling and stocking densities. We aim to identify stressors which occur during the handling and transport of livestock, and to develop solutions for their elimination or reduction.

For animals which have to be slaughtered or killed, the programme includes assessment of pre-slaughter handling, stunning, slaughter and killing of farmed livestock; fish and poultry to determine the efficacy of existing and novel practices; and the development of alternative or novel systems for use both inside and outside of slaughterhouses.

Further information on research and development is available on the Defra website at: <http://www.defra.gov.uk/animalh/welfare/farmed/randd.htm>

Advice and guidance

Welfare in transport

Our objective is to secure high standards of welfare for animals being transported and to ensure they be treated in a humane way. This requires well-maintained vehicles, designed for the welfare of animals, and sympathetic handling by properly trained and competent personnel.

In June we wrote to exporters of farm livestock and horses advising them on the transport of animals in hot weather, as part of wider guidance issued on the ventilation of livestock vehicles.⁵⁸

Further information on the welfare of animals during transport is available on the Defra website at: <http://www.defra.gov.uk/animalh/welfare/farmed/transport.htm>

Welfare at slaughter

Following a research and development programme to develop a portable medium-throughput means of killing birds to deliver high welfare, a new system using a containerised gassing control unit has been trialled. Training videos for field staff were produced and distributed to accompany the rollout of this system. We also intend to distribute details of the system to all other OIE member states.

During 2005, we published the final government response⁵⁹ to FAWC's report⁶⁰ on the welfare of red meat animals at slaughter. To take forward recommendations in the report that we agreed to implement, we have initiated discussion with stakeholders on how to meet the requirements of Official Feed and Food Controls in relation to welfare at slaughter.

To improve the welfare of poultry at slaughter, we have carried out further work on a white meat code of practice with a view to publishing this early in 2006.

Welfare on farms

During 2005, on behalf of Defra, the Agricultural Development and Advisory Service (ADAS) ran a series of welfare campaigns to raise awareness on topics of welfare concern. Meetings, workshops, and on-farm demonstrations to review important welfare issues were held for farmers, managers and stock-keepers. These campaigns continued to create much interest within the industry and are very successful in contributing to an increased awareness and better understanding of many of the key welfare issues. The majority of the campaigns are supported by leaflets or booklets, and the publication of articles and notices in farming journals for farmers encourages good practice. Visits to individual farms by ADAS, either at the request of farmers themselves or of SVS officials, provide general advice on such things as nutrition, housing, ventilation and pasture management.

⁵⁸ <http://www.defra.gov.uk/animalh/welfare/farmed/transport/guideandpub.htm>

⁵⁹ http://www.defra.gov.uk/animalh/welfare/farmed/final_response.pdf

⁶⁰ <http://www.fawc.org.uk/reports/pb8347.pdf>

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Figure E2.1: Advisory campaigns carried out in 2005

Poultry	<ul style="list-style-type: none">• Pododermatitis and Broiler Litter Management• Health and Welfare of the Free Range Flock in Later Lay and Catching and Loading
Ruminants	<ul style="list-style-type: none">• Housing the Modern Dairy Cow
Pigs	<ul style="list-style-type: none">• Health and Welfare in the Rearing/Finishing Herd
Beef and sheep	<ul style="list-style-type: none">• Managing Suckler Cows After Reform of the Common Agricultural Policy• Management of Growing Lambs

Farm Animal Welfare Council

In February 2005, a new chairman of the Farm Animal Welfare Council (FAWC) was appointed. FAWC is an independent advisory body established by the Government in 1979. Its terms of reference are to keep under review the welfare of farm animals on agricultural land, at market, in transit and at the place of slaughter, and to advise the Government of any legislative or other changes that may be necessary.

A new working group was established to consider the long-term future for farm animal welfare in GB. The work of the Welfare Strategy group will also encompass an ethically-based framework for farm animal welfare standards, surveillance and goals. The group intends to consult in 2006.

A strategic planning exercise commenced to determine FAWC's work programme in the short and medium term. This included an electronic survey of FAWC's stakeholders to elicit their views on FAWC's strategic priorities. Based on the results of this survey, ten topics were identified for an initial appraisal by Council. Three of these topics will eventually be selected and be investigated further.

2005 has also seen the establishment of a rapid response mechanism via three Standing Committees to respond to urgent requests by Ministers and senior officials, for example, the response to Defra on welfare implications in relation to avian influenza.

FAWC produced two reports in June, concerning farm assurance and welfare at gatherings. The first looks at the welfare standards experienced by farm animals in herds/flocks which are members of assurance schemes. The report's recommendations are addressed to all those involved in the food supply chain with the objective of strengthening commitment to animal welfare. The second report offers FAWC's views on the welfare of farmed animals at gatherings (and horses in markets, sales and fairs), and makes a number of recommendations that aim to improve the standard of animal welfare at animal gatherings.

There has also been ongoing work on four new reports in the areas of white meat slaughter, welfare labelling, stockmanship, and castration and tail docking in lambs.

FAWC's reports are available at: <http://www.fawc.org.uk/reports.htm>

The Government's response to FAWC reports can be accessed at:
<http://www.defra.gov.uk/animalh/welfare/farmed/fawc-resps.htm>

Global participation

Council of Europe

At the plenary meeting of the Standing Committee of the European Convention for the Protection of Animals kept for Farming Purposes in November 2005, the articles of the Recommendations for farmed Fish were adopted. The detailed species-specific appendices will be developed further by expert working groups during 2006.

In accordance with the rules of the European Convention on the keeping of animals for farming purpose, the Recommendations for Cattle are being reviewed and drafting of new recommendations for rabbits commenced.

EU

A UK delegation attended the EU Welfare Quality conference held in Brussels in November 2005, which reported on the progress so far of the EU 17 million euro eponymous project. We also participated in the Welfare Assessment of Farm Livestock seminar held in Vienna in September which explored various ways to measure the welfare of farmed animals.

OIE

During 2005 we formulated comments on OIE welfare guidelines for slaughter of animals for human consumption and killing for disease control. We provided technical briefing at the OIE plenary session in May for the successful adoption of the four animal welfare guidelines on:

- Slaughter of animals for human consumption;
- Killing of animals for disease control purposes;
- Transport of animals by sea; and
- Transport of animals by land.

Enforcement/inspections

On-farm inspections

In 2005, the SVS carried out 6,123 welfare inspections at 3,349 visits (1.8 inspections per visit) on farms to check that legislation and welfare codes are followed. All complaints and allegations of poor welfare on specific farms are treated as a matter of urgency. The results of these inspections (which consist of up to 11 assessments) are summarised to depict results for species and the different assessments in **Figures E2.3** and **E2.5**. In addition to these visits, the SVS carry out welfare inspection on a random basis and the results of these inspections are also summarised to depict results for species and the different assessments in **Figures E2.2** and **E2.4**.

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Figure E2.2: Assessments of the welfare of animals on farm in GB during programme and elective visits – Enterprise (2005)

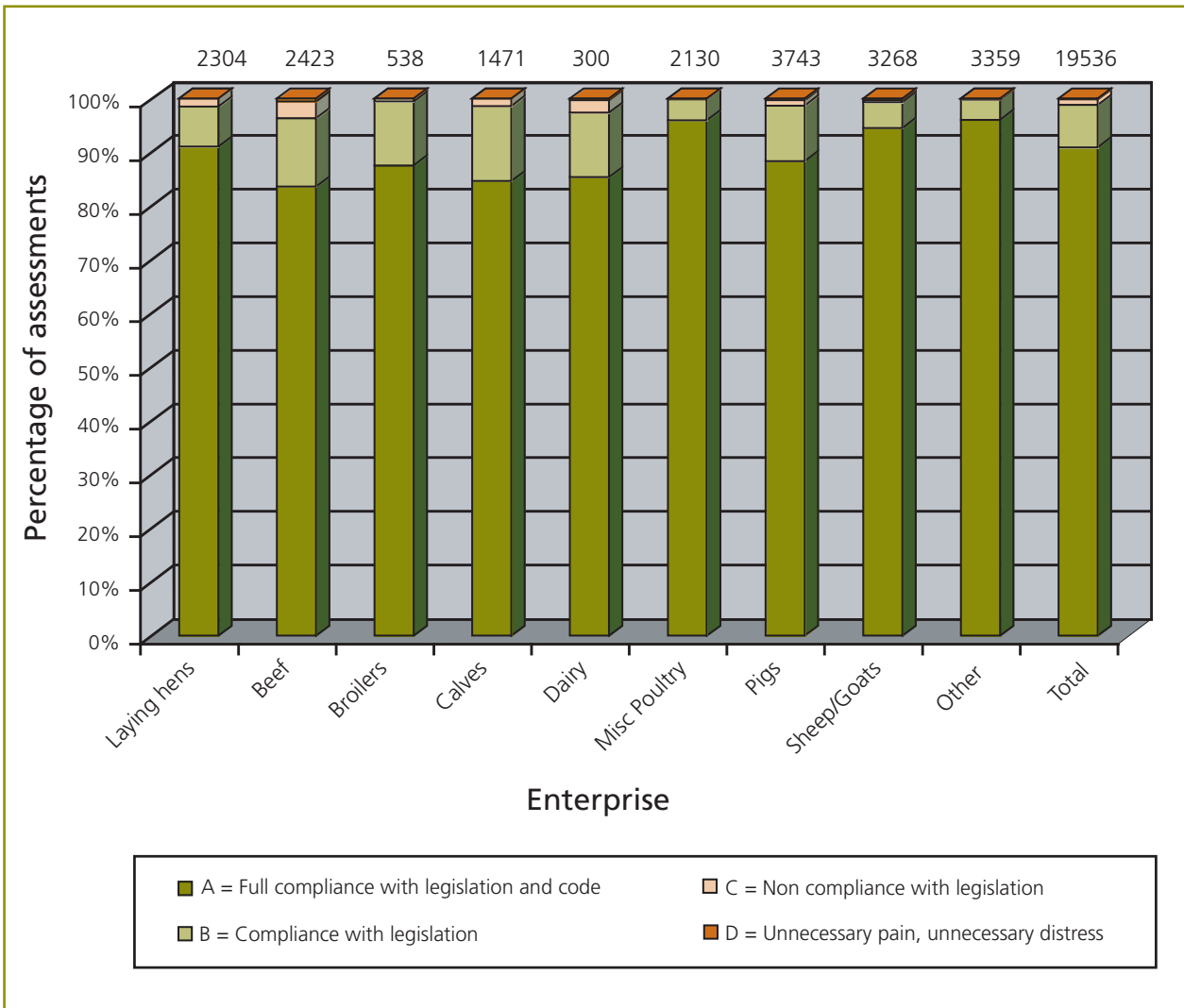
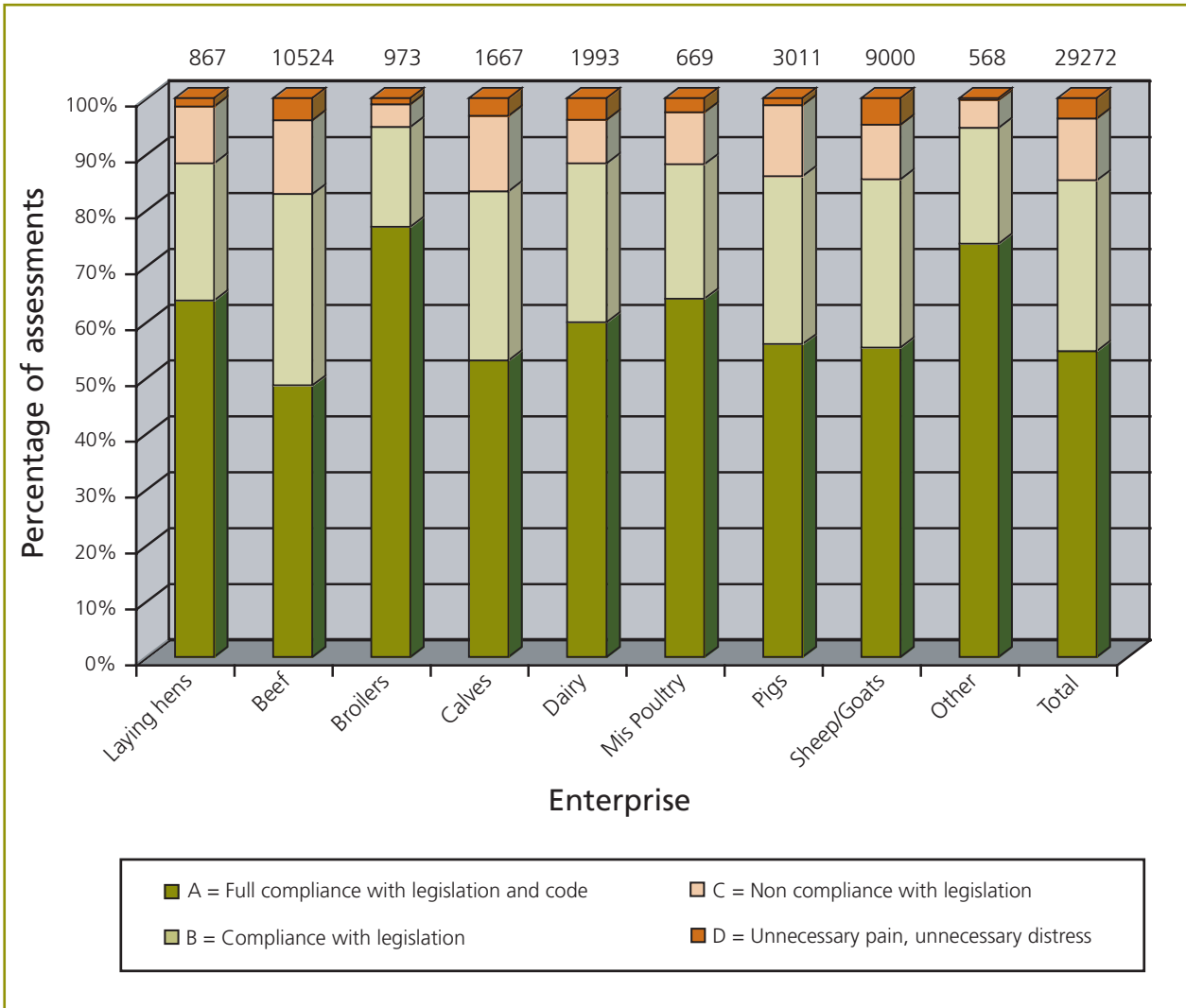


Figure E2.3: Assessments of the welfare of animals on farm in GB during complaint and target visits – Enterprise (2005)



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Figure E2.4: Assessments of the welfare of animals on farm in GB during programme and elective visits – criteria (2005)

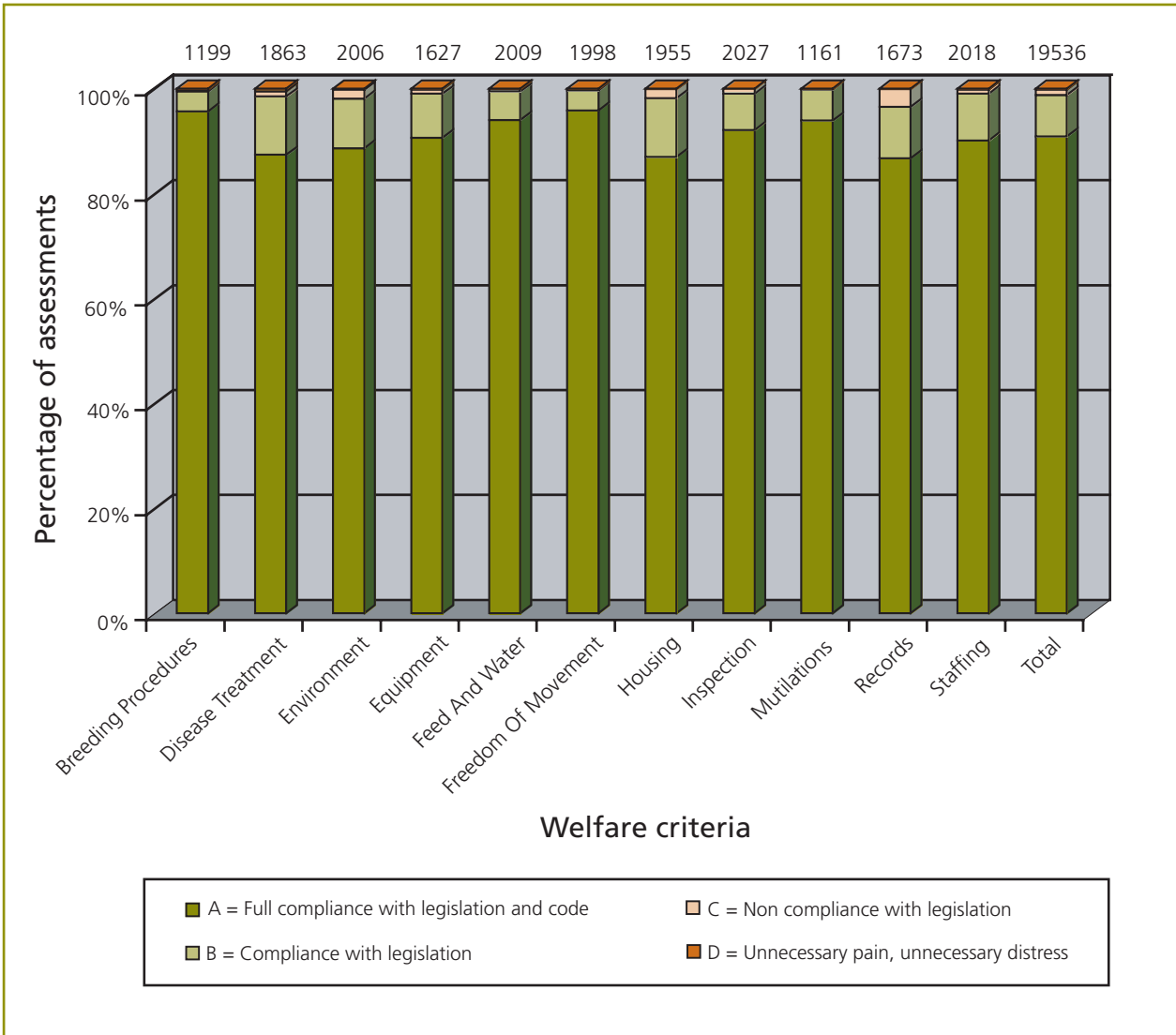
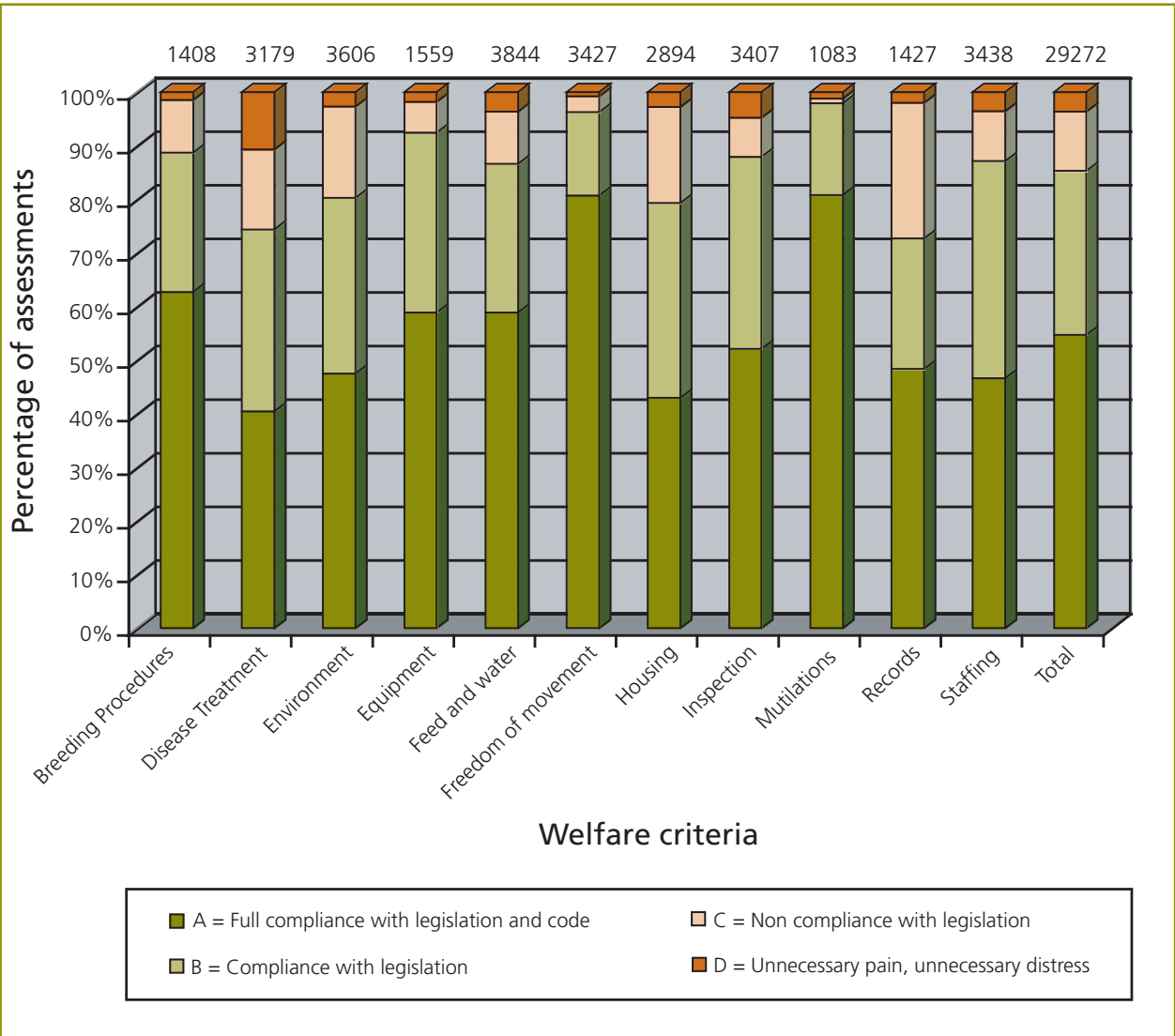


Figure E2.5: Assessments of the welfare of animals on farm in GB during complaint and target visits – criteria (2005)

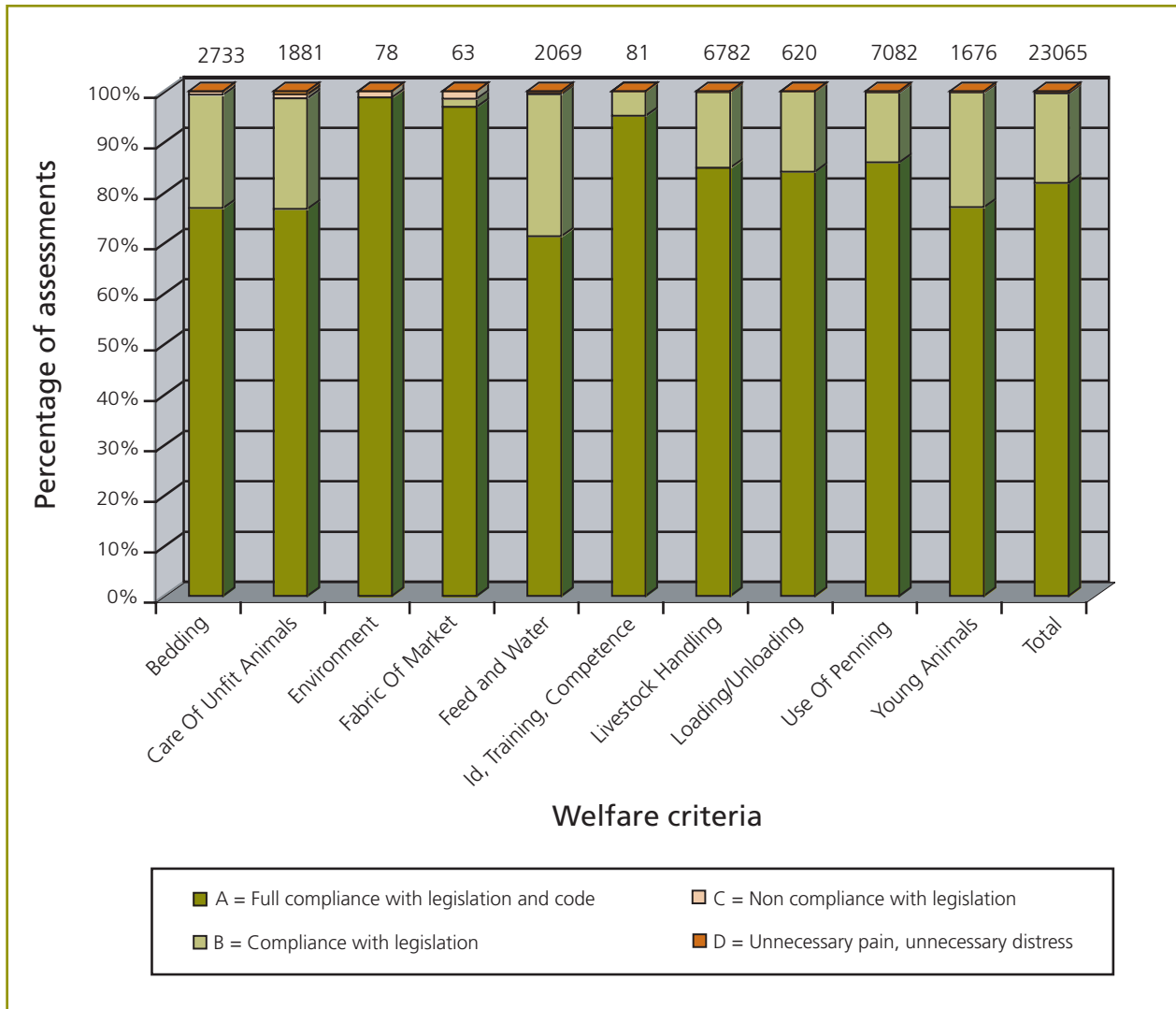


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Market inspections

In 2005, the SVS carried out 7,293 welfare inspections at 2,943 visits (2.5 inspections per visit) at markets and a summary of the findings is shown in **Figure E2.6**.

Figure E2.6: Assessments of the welfare of animals at markets in GB (2005)



Further information on welfare of animals can be found on the Defra website at:
<http://www.defra.gov.uk/animalh/welfare>

Section F: Appendices

Table F.1.1: Number of stock slaughtered and compensation paid in Great Britain 2001–2005

	2001		2002		2003		2004		2005	
	No.	£	No.	£	No.	£	No.	£	No.	£
Bovine Tuberculosis (cattle)										
(a) Affected animals	0	0	0	0	0	0	0	0	0	0
(b) Reactors and dangerous contacts	5,916	7,074,125	22,886	23,138,512	23,047 ^(b)	38,216,249	22,510	33,785,023 ^(b)	23,036	42,844,857
Total Bovine Tuberculosis (cattle)	5,916	7,074,125	22,886	23,138,512	23,047 ^(b)	38,216,249	22,510	33,785,023 ^(b)	23,036	42,844,857
Bovine Tuberculosis (deer) ⁽¹⁾										
(a) Affected animals	2	0	0	0	N/A	N/A	N/A	N/A	N/A	N/A
(b) Reactors and dangerous contacts	0	0	N/A	1,200	N/A	1,923	N/A	38,089	78	107,250
Total Bovine Tuberculosis (deer)	2	0	N/A	1,200	N/A	1,923	N/A	38,089	78	107,250
Bovine Brucellosis	0	0	0	0	422	396,497	167	149,096	20 ^(e)	14,856
Aujeszky's Disease (pigs) ⁽²⁾	0	0	0	0	0	0	0	0	0	0
Bovine Spongiform Encephalopathy ⁽³⁾	1,153	576,582	882	527,994	419	320,468	310	137,018	156 ^(f)	84,235
FMD ⁽⁴⁾	–	–	–	–	–	–	–	–	3,042 ^(g)	7,184,559
Scrapie ⁽⁵⁾	–	–	–	–	–	–	–	–	429 ^(h)	431,170
	3,277,151 ^(a)	1,103,418,970 ^(a)	0	399,750	0	0	0	0	0	0
	355	9,434	493	0	487	16,825	437 ^(c)	36,810 ^(c)	305	30,385
	–	–	–	–	–	–	113,380 ^(d)	5,384,640 ^(d)	187,223	12,140,776
Avian Influenza	0	0	0	0	0	0	0	0	0	0
Newcastle Disease	0	0	0	0	0	0	0	0	10,240 ⁽ⁱ⁾	0
Classical Swine Fever (pigs)	–	–	–	–	–	–	0	0	0	0
Swine Vesicular Disease	0	0	0	0	0	0	0	0	0	0
Total Compensation	3,284,577^(a)	118,002,038^(a)	24,261	24,067,456	24,375	38,951,962	136,804	39,530,676^(b)	224,529	62,838,088

(1) Compulsory slaughter with compensation for deer was introduced on 1 September 1989

(2) The cost of the eradication scheme was met by the pig industry

(3) Compulsory slaughter with compensation commenced 8 August 1988

(4) Compensation payments pertain to animals slaughtered in previous year

(5) Compulsory slaughter with compensation commenced 29 July 1998

(a) Revised figures

(b) Provisional figures

(c) Slaughtered as suspects

(d) Stock slaughtered under Scrapie Flock Schemes

(e) One direct contact

(f) Slaughtered as suspects

(g) Slaughtered under cohort cull

(h) Slaughtered under offspring

(i) Only one premises affected, Defra does not make public individual compensation payments

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Table F1.2: Outbreak of notifiable diseases, excluding TB, in each county of Great Britain during 2005

	CEM	ND	PVM in Pigeons
England			
Berkshire	–	–	1
Buckinghamshire	–	–	1
Cleveland	–	–	2
Hampshire	–	–	2
Kent	–	–	1
Manchester	–	–	5
Merseyside	–	–	2
North Yorkshire	–	–	1
Oxfordshire	–	–	1
Somerset	1	–	–
Surrey	–	1	2
West Yorkshire	–	–	2
ENGLAND TOTAL	1	1	20
Wales			
WALES TOTAL	0	0	0
Scotland			
Borders	–	–	1
Lothian	–	–	1
Strathclyde	–	–	1
SCOTLAND TOTAL	0	0	3
GB TOTAL	1	1	23

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Table F1.3: Outbreaks of Scrapie and BSE in GB during 2005

County	Scrapie Scanning	Scrapie Targeted	BSE Scanning	BSE Targeted
ENGLAND				
Berkshire				1
Buckinghamshire			1	1
Cheshire		1	1	10
Cornwall & Isles of Scilly			3	3
Cumbria		1	3	5
Derbyshire	1	1	1	4
Devon		1	2	8
Dorset		2	1	9
Durham		2		
East Riding & Northern Lincolnshire			1	1
Essex		1		2
Gloucestershire			3	7
Gloucestershire (ex South)		2	2	4
Hampshire			1	3
Herefordshire				3
Kent				4
Lancashire		1		4
Leicestershire & Rutland		3		5
Lincolnshire (ex North)			3	2
Norfolk				7
North Yorkshire		5		2
Northamptonshire		1		3
Northumberland		1		6
Nottinghamshire		1	3	
Oxfordshire			2	2
Shropshire	1	2	5	5
Somerset		1		
South Yorkshire				1
Staffordshire		1		3
Suffolk		1	1	3
Surrey				1
Warwickshire			1	1
West Sussex				1

(continued)

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Table F1.3: Outbreaks of Scrapie and BSE in GB during 2005				
County	Scrapie Scanning	Scrapie Targeted	BSE Scanning	BSE Targeted
Wiltshire			1	4
Worcestershire		2		2
ENGLAND TOTAL	2	30	35	117
WALES				
Carmarthenshire		5		2
Ceredigion		4	1	2
North East Wales		3		5
Noth West Wales		2	2	2
Pembrokeshire				9
Powys	1	4		4
South Wales		1		1
WALES TOTAL	1	20	3	25
SCOTLAND				
Ayrshire				1
Clyde Valley				1
Dumfries & Galloway				4
Highland		2	1	3
Lothian				1
North East Scotland		1		5
Orkney		1		3
Tayside				3
SCOTLAND TOTAL	0	4	1	21
Untraced		5		
GB TOTAL	3	58	39	163
<p><i>Any discrepancies between the county breakdown scrapie statistics and scrapie statistics provided elsewhere in the report may be due to difficulties in tracing cases to their flock of origin and/or pending cases subsequently confirmed.</i></p> <p><i>Please note, that the statistics for BSE and Scrapie are reported along different county boundaries to other notifiable diseases</i></p>				

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Notifiable diseases that did not occur in GB in 2005
African Horse Sickness
African Swine Fever
Anthrax
Aujeszky's Disease
Avian Influenza
Blue Tongue
Brucellosis (<i>Brucella abortus</i>)
Brucellosis (<i>Brucella melitensis</i>)
Classical Swine Fever
Contagious agalactia
Contagious Bovine Pleuropneumonia
Contagious Epididymitis (<i>Brucella ovis</i>)
Dourine
Enzootic Bovine Leukosis
Epizootic Haemorrhagic Virus Disease
Epizootic Lymphangitis
Equine Viral Arteritis
Equine Viral Encephalomyelitis
Equine Infectious Anaemia
Foot and Mouth Disease
Glanders and Farcy
Goat Pox
Lumpy Skin Disease
Pest des Petits Ruminants
Rabies
Rift Valley Fever
Rinderpest (Cattle plague)
Sheep Pox
Swine Vesicular Disease
Teschen Disease (Porcine enterovirus encephalomyelitis)
Vesicular Stomatitis
Warble Fly
West Nile Virus

Legislation

Acts passed in 2005

none

Acts revoked in 2005

none

General Orders and Regulations made in 2005

Statutory Instruments 2005

The Diseases of Animals (Approved Disinfectants) Amendment (Scotland) Order 2005 [SI 2005/99]

The TSE (Scotland) Amendment Regulations 2005 [SI 2005/173]

The Production of Bovine Collagen Intended for Human Consumption in the United Kingdom (Scotland) Regulations 2005 [SI 2005/218]

The Horse Passports (Scotland) Regulations 2005 [SI 2005/223]

The Animals and Animal Products (Import and Export) (Scotland) Amendment Regulations 2005 [SI 2005/278]

The Products of Animal Origin (Third Country Imports) (Scotland) Amendment (No.2) Regulations 2005 [SI 2005/645]

The *Salmonella* in Laying Flocks (Survey Powers) (England) Regulations 2005 [SI 2005/359]

The Tuberculosis (Scotland) Order 2005 [SI 2005/434]

The TSE (Scotland) Amendment (No. 2) Regulations 2005 [SI 2005/469]

The *Salmonella* in Broiler Flocks (Sampling Powers) (Scotland) Regulations 2005 [SI 2005/496]

The Diseases of Animal Products (Import and Export) (Scotland) Amendment (No.2) Regulations 2005 [SI 2005/502]

The Avian Influenza (Preventive Measures) (Scotland) Regulations 2005 [SI 2005/530]

The Avian Influenza (Preventive Measures in Zoos) (Scotland) Regulations 2005 [SI 2005/531]

Disease of Animals (Approved Disinfectants) (Amendment) (Wales) Order 2005 [SI 2005/583]

The *Salmonella* in Laying Flocks (Survey Powers) (Wales) Regulations 2005 [SI 2005/586]

The Diseases of Animals (Approved Disinfectants) Amendment (No.2) (Scotland) Order 2005 [SI 2005/587]

The Avian Influenza (Preventive Measures) (Date for Identification of Poultry Premises) (Scotland) Regulations 2005 [SI 2005/625]

The Avian Influenza (Preventive Measures) (Scotland) Amendment Regulations 2005 [SI 2005/646]

The Avian Influenza (Preventive Measures in Zoos) (Scotland) Amendment Regulations 2005 [SI 2005/647]

The Transport of Animals (Cleansing and Disinfection) (Scotland) Regulations 2005 [SI 2005/653]

The Products Of Animal Origin (Third Country Imports) (Wales) (Amendment) (Order 2005 [SI 2005/666]

The Animal & Animal products (Import and Export)(Wales)(Amendment) Regs 2005 [SI 2005/1158]

Production of Bovine Collagen Intended for human consumption in the UK (Wales) Regulations 2005 [SI 2005/1397]

The Animals and Animal Products (Import and Export) (England) Regulations 2005 [SI 2005/2002]

The Animal By-Products Regulations 2005 [SI 2005/2347]

The TSE (England) (Amendment) (No.2) Regulations 2005 [SI 2005/2633]

The Avian Influenza & Newcastle Disease (Contingency Planning) (Wales) Order 2005 [SI 2005/2840]

The Transmissible Spongiform Encephalopathies (Wales) (Amendment) Regulations 2005 [SI 2005/2902]

The *Salmonella* in Broiler Flocks (Survey Powers) (England) Regulations 2005 [SI 2005/2927]

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Avian Influenza (Preventative Measures in Zoos) (Wales) Regulations 2005 [SI 2005/2984]

Avian Influenza (Preventative Measures) (Wales) Regulations 2005 [SI 2005/2985]

Avian Influenza (Preventative Measures in Zoos) (Wales) (No.2) Regulations 2005 [SI 2005/3385]

The Products of Animal Origin (Third Country Imports) (England) (No.4) Regulations 2004 [SI 2005/3388]

The Products Of Animal Origin (Third Country Imports) (Amendment) (Wales) Regs 2005 [SI 2005/3395]

The Diseases of Animals (Approved Disinfectants) Amendment (Scotland) Order 2005 [SI 2005/99]

The Products of Animal Origin (Third Country Imports) (Scotland) Amendment Regulations 2005 [SI 2005/323]

General Orders and Regulations revoked in 2005

Statutory Instruments 2005

The Transport of Animals (Cleansing and Disinfection) (Scotland) Regulations 2000 [SI 2000/167]

The Tuberculosis (Scotland) Amendment Order 1990 [SI 1990/275]

The Diseases of Animals (Approved Disinfectants) (Amendment) Order 1999, as relates to Wales [SI 1999/919]

The Diseases of Animals (Approved Disinfectants) (Amendment) (England) Order 2003 [SI 2003/1428]

The Products of Animal Origin (Third Country Imports) (Wales) regulations 2004 [SI 2004/1430]

The Animal By-Products Regulations 2003 [SI 2003/1482]

The Diseases of Animals (Approved Disinfectants) Amendment (Scotland) Order 2004 [SI 2004/537]

The Tuberculosis (Scotland) Order 1984 [SI 1984/2063]

Horse Passports Amendment Order 1998 [SI 1998/2367]

Partially revoked

The Diseases of Animals (Approved Disinfectants) Amendment (Scotland) Order 2003, article 2(1), sub-paragraphs (e) and (f) [SI 2003/334]

Horse Passports Order 1997, paragraph (2) [SI 1997/2789]

The Animal Health Orders (Divisional Veterinary Manager Amendment) Order 1995, paragraph 2 of Part III of Schedule 1 [SI 1995/2922]

Selected publications during 2005

Bacteriology

Arnold ME; Cook A; Davies R 2005

A modelling approach to estimate the sensitivity of pooled faecal samples for isolation of *salmonella* in pigs. *Journal of the Royal Society Interface* 2, 365-372

Ayling RD; Bisgaard-Frantzen S; March JB; Godinho K; Nicholas RAJ 2005

Assessing the in vitro effectiveness of antimicrobials against *Mycoplasma mycoides* subsp. *mycoides* small-colony type to reduce contagious bovine pleuropneumonia infection. *Antimicrobial Agents and Chemotherapy* 49 (12) 5162-5165

Bashiruddin JB; Frey J; Konigsson MH; Johansson KE; Hotzel H; Diller R; Santis P de; Botelho A; Ayling RD; Nicholas RAJ; Thiaucourt F; Sachse K 2005

Evaluation of PCR systems for the identification and differentiation of *Mycoplasma agalactiae* and *Mycoplasma bovis*: a collaborative trial. *Veterinary Journal* 169 (2) 268-275

Batchelor M; Clifton-Hadley FA; Stallwood AD; Paiba GA; Davies RH; Liebana E 2005

Detection of multiple cephalosporin-resistant *Escherichia coli* from a cattle fecal sample in Great Britain. *Microbial Drug Resistance* 11 (1) 58-61

Best A; La Ragione RM; Sayers AR; Woodward MJ 2005

Role for flagella but not intimin in the persistent infection of the gastrointestinal tissues of specific-pathogen-free chicks by shiga toxin-negative *Escherichia coli* O157:H7. *Infection and Immunity* 73 (3) 1836-1846

Buddle BM; Aldwell FE; Skinner MA; Lisle GW de; Denis M; Vordermeier HM; Hewinson RG; Wedlock DN 2005

Effect of oral vaccination of cattle with lipid-formulated BCG on immune responses and protection against bovine tuberculosis. *Vaccine* 23 (27) 3581-3589

Cutler SJ; Whatmore AM; Commander NJ 2005

Brucellosis: new aspects of an old disease.

Journal of Applied Microbiology 98 (6) 1270-1281

Davison HC; Smith RP; Pascoe SJS; Sayers AR; Davies RH; Weaver JP; Kidd SA; Dalziel RW; Evans SJ 2005

Prevalence, incidence and geographical distribution of serovars of *salmonella* on dairy farms in England and Wales. *Veterinary Record* 157 (22) 703-711

Dean GS; Rhodes SG; Coad M; Whelan AO; Cockle PJ; Clifford DJ; Hewinson RG; Vordermeier HM 2005

Minimum infective dose of *Mycobacterium bovis* in cattle. *Infection and Immunity* 73 (10) 6467-6471

Diggle P; Zheng P; Durr P 2005

Nonparametric estimation of spatial segregation in a multivariate point process: bovine tuberculosis in Cornwall, UK. *Journal of the Royal Statistical Society Series C – Applied Statistics* 54 (3) 645-658

Evans SJ; Davies RH; Binns SH; Liebana E; Jones TWH; Millar MF; Threlfall EJ; Ward LR; Hopkins KL; MacKay PHS; Gayford PJR 2005

Multiple antimicrobial resistant *Salmonella* enterica serovar paratyphi B variant Java in cattle: a case report. *Veterinary Record* 156 (11) 343-346

Fend R; Geddes R; Lesellier S; Vordermeier HM; Corner LAL; Gormley E; Costello E; Hewinson RG; Marlin DJ; Woodman AC; Chambers MA 2005

Use of an electronic nose to diagnose *Mycobacterium bovis* infection in badgers and cattle. *Journal of Clinical Microbiology* 43 (4) 1745-1751

Garcia-Migura L; Pleydell E; Barnes S; Davies RH; Liebana E 2005

Characterization of vancomycin-resistant *Enterococcus faecium* isolates from broiler poultry and pig farms in England and Wales. *Journal of Clinical Microbiology* 43 (7) 3283-3289

Gilbert M; Mitchell A; Bourn D; Mawdsley J; Clifton-Hadley R; Wint W 2005

Cattle movements and bovine tuberculosis in Great Britain (letter). *Nature* 435 (7041) 491-496

Gordon SV; Cadmus S; Oluwasola A 2005

Molecular methods needed for the accurate assessment of *Mycobacterium bovis* infection (letter). *International Journal of Tuberculosis and Lung Disease* 9 (6) 704

Gradel KO; Randall L; Sayers AR; Davies RH 2005

Possible associations between *salmonella* persistence in poultry houses and resistance to commonly used disinfectants and a putative role of mar. *Veterinary Microbiology* 107 (1-2) 127-138

Hope JC; Thom ML; Villarreal-Ramos B; Vordermeier HM; Hewinson RG; Howard CJ 2005

Exposure to *Mycobacterium avium* induces low-level protection from *Mycobacterium bovis* infection but compromises diagnosis of disease in cattle. *Clinical and Experimental Immunology* 141 (3) 432-439

Johnston WT; Gettinby G; Cox DR; Donnelly CA; Bourne J; Clifton-Hadley R; Le Fevre AM; McInerney JP; Mitchell A; Morrison WI; Woodroffe R 2005

Herd-level risk factors associated with tuberculosis breakdowns among cattle herds in England before the 2001 foot-and-mouth disease epidemic. *Biology Letters* 1 (1) 53-56

Landeg F 2005

Pilot project to assess the use of lay testing for bovine TB (letter). *Veterinary Record* 157 (5) 151-152

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La Ragione RM; Best A; Sprigings K; Liebana E; Woodward GR; Sayers AR; Woodward MJ 2005

Variable and strain dependent colonisation of chickens by *Escherichia coli* O157. *Veterinary Microbiology* 107 (1-2) 103-113

Liebana E; Smith RP; Batchelor M; McLaren I; Cassar C; Clifton-Hadley FA; Paiba GA 2005
Persistence of *Escherichia coli* O157 isolates on bovine farms in England and Wales. *Journal of Clinical Microbiology* 43 (2) 898-902

Logan KE; Chambers MA; Hewinson RG; Hogarth PJ 2005
Frequency of IFN-gamma producing cells correlates with adjuvant enhancement of bacille Calmette-Guerin induced protection against *Mycobacterium bovis*. *Vaccine* 23 (48-49) 5526-5532

McCorry T; Whelan AO; Welsh MD; McNair J; Walton E; Bryson DG; Hewinson RG; Vordermeier HM; Pollock JM 2005
Shedding of *Mycobacterium bovis* in the nasal mucus of cattle infected experimentally with tuberculosis by the intranasal and intratracheal routes. *Veterinary Record* 157 (20) 613-618

Miles K; McAuliffe L; Persson A; Ayling RD; Nicholas RAJ 2005
Insertion sequence profiling of UK *Mycoplasma bovis* field isolates. *Veterinary Microbiology* 107 (3-4) 301-306

Mostowy S; Inwald J; Gordon S; Martin C; Warren R; Kremer K; Cousins D; Behr MA 2005
Revisiting the evolution of *Mycobacterium bovis*. *Journal of Bacteriology* 187 (18) 6386-6395

Newell D 2005
Campylobacters: epidemiology, ecology and the potential for control. *World Poultry* 21 (7) 26-27

Purvis GM; Hullah K; Pascoe SJS; Evans SJ; Davies RH 2005
Persistence of *Salmonella* Typhimurium DT120 in abattoir paddocks holding sheep. *Veterinary Record* 157 (6) 165-167

Randall LP; Coldham NG; Woodward MJ 2005
Detection of mutations in *Salmonella* enterica *gyrA*, *gyrB*, *parC* and *parE* genes by denaturing high performance liquid chromatography (DHPLC) using standard HPLC instrumentation. *Journal of Antimicrobial Chemotherapy* 56 (4) 619-623

Reynolds D 2005
Bovine TB and badgers (letter). *Veterinary Record* 156 (14) 455

Skinner MA; Wedlock DN; Lisle GW de; Cooke MM; Tascon RE; Ferraz JC; Lowrie DB; Vordermeier HM; Hewinson RG; Buddle BM 2005
The order of prime-boost vaccination of neonatal calves with *Mycobacterium bovis* BCG and a DNA vaccine encoding mycobacterial proteins Hsp65, Hsp70, and Apa is not critical for enhancing protection against bovine tuberculosis.

Infection and Immunity 73 (7) 4441-4444

Wales AD; Pearson GR; Best A; Cookson AL; La Ragione RM; Roe JM; Hayes CM; Woodward MJ 2005

Naturally acquired attaching and effacing *Escherichia coli* in sheep.
Research in Veterinary Science 78 (2) 109-115

Wales AD; Woodward MJ; Pearson GR 2005

Attaching-effacing bacteria in animals. *Journal of Comparative Pathology* 132 (1) 1-26

Wangoo A; Johnson L; Gough J; Ackbar R; Inglut S; Hicks D; Spencer Y; Hewinson G; Vordermeier M 2005

Advanced granulomatous lesions in *Mycobacterium bovis*-infected cattle are associated with increased expression of type I procollagen, gammadelta (WC1+) T cells and CD 68+ cells. *Journal of Comparative Pathology* 133 (4) 223-234

Wedlock DN; Skinner MA; Lisle GW de; Vordermeier HM; Hewinson RG; Hecker R; Drunen Littel-van den Hurk S van; Babiuk LA; Buddle BM 2005

Vaccination of cattle with *Mycobacterium bovis* culture filtrate proteins and CpG oligodeoxynucleotides induces protection against bovine tuberculosis.
Veterinary Immunology and Immunopathology 106 (1-2) 53-63

Wessels J; Wessels ME 2005

Histophilus somni myocarditis in a beef rearing calf in the United Kingdom.
Veterinary Record 157 (14) 420-421

Whatmore AM; Murphy TJ; Shankster S; Young E; Cutler SJ; Macmillan AP 2005

Use of amplified fragment length polymorphism to identify and type brucella isolates of medical and veterinary interest. *Journal of Clinical Microbiology* 43 (2) 761-769

Wilkinson KA; Stewart GR; Newton SM; Vordermeier HM; Wain JR; Murphy HN; Horner K; Young DB; Wilkinson RJ 2005

Infection biology of a novel alpha-crystallin of *Mycobacterium tuberculosis*: Acr2.
Journal of Immunology 174 (7) 4237-4243

Woodroffe R; Donnelly CA; Johnston WT; Bourne FJ; Cheeseman CL; Clifton-Hadley RS; Cox DR; Gettinby G; Hewinson RG; Le Fevre AM; McInerney JP; Morrison WI 2005

Spatial association of *Mycobacterium bovis* infection in cattle and badgers *Meles meles*.
Journal of Applied Ecology 42 (5) 852-862

Parasitology

Dhawi A; Hart CA; Demirkan I; Davies IH; Carter SD 2005

Bovine digital dermatitis and severe virulent ovine foot rot: a common spirochaetal pathogenesis. *Veterinary Journal* 169 (2) 232-241

Section F: Appendices

Edwards GT; Walters TM; Glossop C 2005

Re-emerging risk of hydatid disease in Wales (letter). *Veterinary Record* 157 (24) 782

Gaudie CM; Evans RJ; Done SH 2005

Coccidiosis in replacement gilts. *Veterinary Record* 157 (17) 517-519

Pritchard GC; Forbes AB; Williams DJL; Salimi-Bejestani MR; Daniel RG 2005

Emergence of fasciolosis in cattle in East Anglia. *Veterinary Record* 157 (19) 578-582

Salimi-Bejestani MR; Daniel RG; Felstead SM; Cripps PJ; Mahmood H; Williams DJL 2005

Prevalence of *Fasciola hepatica* in dairy herds in England and Wales measured with an ELISA applied to bulk-tank milk. *Veterinary Record* 156 (23) 729-731

Simpson VR; Panciera RJ; Hargreaves J; McGarry JW; Scholes SFE; Bown KJ; Birtles RJ 2005

Myocarditis and myositis due to infection with hepatozoon species in pine martens (*Martes martes*) in Scotland. *Veterinary Record* 156 (14) 442-446

Wood AM; Smith HV 2005

Spironucleosis (hexamitiasis, hexamitosis) in the ring-necked pheasant (*Phasianus colchicus*): detection of cysts and description of *Spironucleus meleagridis* in stained smears. *Avian Diseases* 49 (1) 138-143

Spongiform encephalopathies

Bellworthy SJ; Dexter G; Stack M; Chaplin M; Hawkins SAC; Simmons MM; Jeffrey M; Martin S; Gonzalez L; Hill P 2005

Natural transmission of BSE between sheep within an experimental flock. *Veterinary Record* 157 (7) 206

Bellworthy SJ; Hawkins SAC; Green RB; Blamire I; Dexter G; Dexter I; Lockey R; Jeffrey M; Ryder S; Berthelin-Baker C; Simmons MM 2005

Tissue distribution of bovine spongiform encephalopathy infectivity in Romney sheep up to the onset of clinical disease after oral challenge. *Veterinary Record* 156 (7) 197-202

Del Rio Vilas VJ; Ryan J; Elliott HG; Tongue SC; Wilesmith JW 2005

Prevalence of scrapie in sheep: results from fallen stock surveys in Great Britain in 2002 and 2003. *Veterinary Record* 157 (23) 744-745

Del Rio Vilas VJ; Sayers R; Sivam K; Pfeiffer D; Guitain J; Wilesmith JW 2005

A case study of capture-recapture methodology using scrapie surveillance data in Great Britain. *Preventive Veterinary Medicine* 67 (4) 303-317

Eglin RD; Warner R; Gubbins S; Sivam SK; Dawson M 2005

Frequencies of PrP genotypes in 38 breeds of sheep sampled in the National Scrapie Plan for Great Britain. *Veterinary Record* 156 (14) 433-437

Gavier-Widen D, Stack MJ; Baron T; Balachandran A; Simmons M 2005

Diagnosis of transmissible spongiform encephalopathies in animals: a review.
Journal of Veterinary Diagnostic Investigation 17 (6) 509-527

Gibbens N 2005

Link between feed bins and BSE cases born after July 1996 (letter).
Veterinary Record 157 (24) 782-783

Gibbens N 2005

Surveillance for BSE (letter). *Veterinary Record* 156 (22) 718

Gonzalez I; Jeffrey M; Siso S; Martin S; Bellworthy SJ; Stack MJ; Chaplin MJ; Davis L;
Dagleish MP; Reid HW 2005

Diagnosis of preclinical scrapie in samples of rectal mucosa (letter).
Veterinary Record 156 (26) 846-847

Gonzalez L; Martin S; Houston FE; Hunter N; Reid HW; Bellworthy SJ; Jeffrey M 2005

Phenotype of disease-associated PrP accumulation in the brain of bovine spongiform encephalopathy experimentally infected sheep. *Journal of General Virology* 86 (3) 827-838

Green R; Horrocks C; Wilkinson A; Hawkins SAC; Ryder SJ 2005

Primary isolation of the bovine spongiform encephalopathy agent in mice: agent definition based on a review of 150 transmissions. *Journal of Comparative Pathology* 132 (2-3) 117-131

Gubbins S 2005

A modelling framework to describe the spread of scrapie between sheep flocks in Great Britain. *Preventive Veterinary Medicine* 67 (2-3) 143-156

Gubbins S; Webb CR 2005

Simulation of the options for a national control programme to eradicate scrapie from Great Britain. *Preventive Veterinary Medicine* 69 (3-4) 175-187

Hamir AN; Kunkle RA; Cutlip RC; Miller JM; O'Rourke KI; Williams ES; Miller MW; Stack MJ; Chaplin MJ; Richt JA 2005

Experimental transmission of chronic wasting disease agent from mule deer to cattle by the intracerebral route. *Journal of Veterinary Diagnostic Investigation* 17 (3) 276-281

Kelly DF; Wells GAH; Haritani M; Higgins RJ; Jeffrey M 2005

Neuropathological findings in cats with clinically suspect but histologically unconfirmed feline spongiform encephalopathy. *Veterinary Record* 156 (15) 472-477

Paul R 2005

National Scrapie Plans - the flock register (letter). *Veterinary Record* 156 (23) 749-750

Scholes SFE; Holliman A; Edward GT; Foster AP; Davies IH; Whitaker K 2005

Unusual encephalopathy in weaned lambs (letter). *Veterinary Record* 157 (26) 853-854

Stevenson MA; Morris RS; Lawson AB; Wilesmith JW; Ryan JBM; Jackson R 2005

Area-level risks for BSE in British cattle before and after the July 1988 meat and bone meal

Section F: Appendices

feed ban. *Preventive Veterinary Medicine* 69 (1-2) 129-144

Tongue SC; Webb P; Simmons MM; Gubbins S 2005
Prevalence of scrapie infection in cull animals from 14 scrapie-affected flocks in Great Britain. *Veterinary Record* 157 (16) 480-482

Townsend SJ; Warner R; Dawson M 2005
PrP genotypes of rare breeds of sheep in Great Britain. *Veterinary Record* 156 (5) 131-134

Vidal E; Marquez M; Ordonez M; Raeber AJ; Struckmeyer T; Oesch B; Siso S; Pumarola M 2005
Comparative study of the PrP BSE distribution in brains from BSE field cases using rapid tests. *Journal of Virological Methods* 127 (1) 24-32

Wear A; Henderson K; Webster K; Patel I 2005
A comparison of rapid bovine spongiform encephalopathy testing methods on autolyzed bovine brain tissue. *Journal of Veterinary Diagnostic Investigation* 17 (2) 99-102

Wells GAH; Spiropoulos J; Hawkins SAC; Ryder SJ 2005
Pathogenesis of experimental bovine spongiform encephalopathy: preclinical infectivity in tonsil and observations on the distribution of lingual tonsil in slaughtered cattle. *Veterinary Record* 156 (13) 401-407

Wessels M; Higgins RJ; Gresham ACJ; Tymms DP 2005
Unusual case of scrapie in a ewe (letter). *Veterinary Record* 157 (16) 492

Virology

Brookes SM; Aegerter JN; Smith GC; Healey DM; Jolliffe TA; Swift SM; Mackie IJ; Pritchard JS; Racey PA; Moore NP; Fooks AR 2005
European bat lyssavirus in Scottish bats. *Emerging Infectious Diseases* 11 (4) 572-578

Brookes SM; Parsons G; Johnson N; McElhinney LM; Fooks AR 2005
Rabies human diploid cell vaccine elicits cross-neutralising and cross-protecting immune responses against European and Australian bat lyssaviruses. *Vaccine* 23 (32) 4101-4109

Foster AP; Houlihan M; Higgins RJ; Errington J; Iyata G; Wakeley PR 2005
BVD virus in a British alpaca (letter). *Veterinary Record* 156 (22) 718

Gloster J; Champion HJ; Mansley LM; Romero P; Brough T; Ramirez A 2005
The 2001 epidemic of foot-and-mouth disease in the United Kingdom: epidemiological and meteorological case studies. *Veterinary Record* 156 (25) 793-803

Gough D; Ceeraz V; Cox B; Palya V; Mato T 2005
Isolation and identification of goose parvovirus in the UK (letter). *Veterinary Record* 156 (13) 424

Jones RD; Kelly L; Fooks AR; Wooldridge M 2005
Quantitative risk assessment of rabies entering Great Britain from North America via cats and dogs. *Risk Analysis* 25 (3) 533-542

Manser P; Westcott D 2005
Equine viral arteritis in a stallion (letter). *Veterinary Record* 156 (1) 28

Racey P; Fooks AR 2005
Rabies in bats in Britain. *Biologist* 52 (1) 34-38

Reynolds D 2005
Avian influenza (letter). *Veterinary Record* 157 (19) 598

Sandvik T; Crooke H; Drew TW; Blome S; Greiser-Wilke I; Moennig V; Gous TA; Gers S; Kitching JA; Buhrmann G; Bruckner GK 2005
Classical swine fever in South Africa after 87 years' absence (letter).
Veterinary Record 157 (9) 267

Wakeley PR; Johnson N; McElhinney LM; Marston D; Sawyer J; Fooks AR 2005
Development of a real-time, TaqMan reverse transcription-PCR assay for detection and differentiation of lyssavirus genotypes 1, 5, and 6.
Journal of Clinical Microbiology 43 (6) 2786-2792

Miscellaneous

Coburn HL; Snary EL; Kelly LA; Wooldridge M 2005
Qualitative risk assessment of the hazards and risks from wild game.
Veterinary Record 157 (11) 321-322

Donaldson LJ; Reynolds DJ 2005
Integrated working. *Veterinary Record* 157 (22) 680-681

Holliman A 2005
Differential diagnosis of diseases causing oral lesions in cattle. *In Practice* 27 (1) 2-13

Holmes P; Duff P 2005
Ingluvitis and oesophagitis in wild finches (letter). *Veterinary Record* 157 (15) 455

Jones J; Williamson S; Scholes S; Hovers K 2005
Congenital myopathy in Beulah speckled face lambs (letter). *Veterinary Record* 156 (8) 258-259

Lysons R 2005
Veterinary surveillance strategy: pilot sentinel network (letter).
Veterinary Record 156 (22) 719

Lysons R; Newton R; Barwise-Munro L 2005
Surveillance for equine diseases (letter). *Veterinary Record* 157 (1) 31

Section F: Appendices

- Mitchell A; Bourn D; Mawdsley J; Wint W; Clifton-Hadley R; Gilbert M 2005
Characteristics of cattle movements in Britain – an analysis of records from the cattle tracing system. *Animal Science* 80 (3) 265-273
- Reynolds D 2005
Residues surveillance of OTMS animals (letter). *Veterinary Record* 156 (20) 654-655
- Reynolds D 2005
Residues survey of OTM scheme animals (letter). *Veterinary Record* 157 (16) 491
- Reynolds D 2005
Tackling future disease outbreaks (letter). *Veterinary Record* 157 (7) 207
- Reynolds D; Donaldson L 2005
UK government collaborations to manage threats to animal and human health. *British Medical Journal* 331 (7527) 1216-1217
- Sabirovic M; Raw L; Hall S; Coulson N 2005
International disease monitoring, January to March 2005. *Veterinary Record* 156 (21) 664-668
- Sabirovic M; Raw L; Hall S; Coulson N 2005
International disease monitoring, October to December 2004. *Veterinary Record* 156 (7) 193-196
- Sabirovic M; Raw L; Hall S; Gibbens N 2005
International disease monitoring, April to June 2005. *Veterinary Record* 157 (12) 333-336
- Sharpe RT; Livesey CT 2005
Surveillance of suspect animal toxicoses with potential food safety implications in England and Wales between 1990 and 2002. *Veterinary Record* 157 (16) 465-469

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Abbreviations and acronyms

A

ACAF	Advisory Committee on Animal Feedingstuffs
ADNS	Animal Disease Notification System
AHT	Animal Health Trust
ASF	African Swine Fever

B

BARB	Born after the reinforced feedban
BCMS	British Cattle Movement Service
BEVA	British Equine Veterinary Association
BPEX	British Pig Executive
BSE	Bovine spongiform encephalopathy
BTB	Bovine Tuberculosis
BTV	Bluetongue
BVA	British Veterinary Association
BVD	Bovine viral diarrhoea

C

CARD	Committee for Aquaculture Research and Development
CBPP	Contagious Bovine Pleuropneumonia
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CEMO	Contagious Equine Metritis Organism
CFI	Centre for Infections
CIE	Counter Immuno Electrophoresis
COST	Committee of Senior Officials for Scientific and Technical research
CRGS	Compulsory Ram Genotyping Scheme
CSF	Classical swine fever
CSFS	Compulsory Scrapie Flock Scheme
CSL	Central Science Laboratory
CTS	Cattle tracing scheme
CVO	Chief Veterinary Officer

D

DARDNI	Department of Agriculture and Rural Development Northern Island
DBES	Date Based Export Scheme
DCMS	Department for Culture, Media and Sport
Defra	Department for Environment, Food and Rural Affairs
DFID	Department for International Development
DH	Department of Health
DVM	Divisional Veterinary Manager

Section F: Appendices

E

EBL	Enzootic bovine leukosis
EC	European Community
ECUG	Export Certification User Group
EFSA	European Food Safety Authority
EIZ	Department of Emerging Infections and Zoonoses
ELISA	Enzyme linked immunosorbent assay
EU	European Union

F

FCO	Foreign and Commonwealth Office
FMD	Foot and mouth disease
FSA	Food Standards Agency
FVO	Food and Veterinary Office

G

GB	Great Britain (England, Scotland and Wales)
GM	Genetic modification
GVS	Government Veterinary Surgeons

H

HPA	Health Protection Agency
HPAI	Highly Pathogenic Avian Influenza

I

IAH	Institute of Animal Health
IHC	Immunohistochemistry
ISG	Independent Scientific Group

L

LMD	Laser Micro Dissection
LPAI	Low Pathogenic Avian Influenza
LSD	Lumpy skin disease
LVI	Local Veterinary Inspectors

M

MAT	Microscopy Analysis Test
MHS	Meat Hygiene Service
MoD	Ministry of Defence
MRSA	Methicillin Resistant Staphylococcus Aureus

N

NED	National Equine Database
NEPNEI	National Expert Panel on New and Emerging Infections
ND	Newcastle Disease
NFA	National Feed Audit
NSP	National Scrapie Plan

O

OBF	Officially Brucellosis Free
OCDS	Older Cattle Disposal System
ODPM	Office of the Deputy Prime Minister
OIE	Office Internationale Epizooties (World Animal Health Organisation)
OST	Office of Science and Technology
OTF	Officially TB Free
OTM	Over Thirty Months

P

PAP	Processed animal protein
PCR	Polymerase chain reaction
PDNS	Porcine dermatitis nephropathy syndrome
PETS	Pet Travel Scheme
PMWS	Post-weaning multisystemic wasting syndrome
POAO	Products of animal origin
PRRS	Porcine reproductive and respiratory syndrome
PSA	Public Service Agreement
PTIS	Parish Testing Intervals

R

RADAR	Rapid Analysis and Detection of Animal-related Risks
RCVS	Royal College of Veterinary Surgeons
RT-PCR	Reverse transcription polymerase chain reaction

S

SAC	Scottish Agricultural College
SAMB	Semen Archive Management Board
SCOFCAH	Standing Committee on the Food Chain and Animal Health
SEAC	Spongiform Encephalopathy Advisory Committee
SEERAD	Scottish Executive Environment and Rural Affairs Department
SHAPE	Survey of Health and Pesticide Exposure
SNP	Single Nucleotide Polymorphism
STEED	Specified Type Equine Exotic Diseases
SVS	State Veterinary Service

T

TB	Tuberculosis
TSE	Transmissible spongiform encephalopathy

U

UK	United Kingdom (England, Scotland, Wales and Northern Ireland)
UKZG	United Kingdom Zoonoses Group

Section F: Appendices

V

VHoP	Veterinary Head of Profession
VLA	Veterinary Laboratories Agency
VMD	Veterinary Medicines Directorate
VNTR	Variable Number Tandem Repeats
VO	Veterinary Officers
VRC	Veterinary Residues Committee
VTEC O157	Verocytotoxin-producing <i>Escherichia coli</i> O157
VTRI	Veterinary Training and Research Initiative

W

WAG	Welsh Assembly Government
WNV	West Nile virus

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The Annual Report of the CVO: Customer Survey Form 2006

The Report of the Chief Veterinary Officer (CVO) on Animal Health 2005 summarises progress and developments in the fields of animal health and welfare within Great Britain (GB) during the last calendar year. The report defines progress in relation to the strategic objectives contained in the Animal Health and Welfare Strategy, as well as a continuous statistical record of the state of animal disease in GB.

This questionnaire should take no longer than 15 minutes to complete. Please return your form to the address below by **30 July 2006**:

CVO Report Editorial Team

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